

**FACTORS AFFECTING THE CAREER ADVANCEMENT OF FEMALE AIR
TRAFFIC CONTROLLERS IN THE SOUTH AFRICAN AIR TRAFFIC
CONTROL INDUSTRY**

by

MARISA FRASER

Submitted in partial fulfilment of the requirements for the degree

**MAGISTER COMMERCII
INDUSTRIAL PSYCHOLOGY**

in the

FACULTY OF ECONOMIC AND MANAGEMENT SCIENCES

at the

UNIVERSITY OF PRETORIA

SUPERVISOR: MS N CARRIM

13 June 2012

ACKNOWLEDGEMENTS

I would like to express my sincere appreciation to the following individuals, whose support and guidance enabled me to complete this dissertation:

- First off all I want to thank the Lord, who gave me the opportunity and strength to do this study,
- To my husband, Shaun Fraser, and my family, thank you for your encouragement and love throughout this study,
- To my supervisor, Prof. Nasima Carrim, thank you for all your feedback, assistance and attention to detail every step of the way towards completing this study,
- To Rina Owen, for helping me with the statistics,
- To all my friends and colleagues, who supported me through it all.

DECLARATION

I, Marisa Fraser, declare that this dissertation, entitled *Factors affecting the career advancement of female air traffic controllers in the South African aviation industry*, is my own work, and that all the sources and references I have used or quoted have been indicated and acknowledged by means of references.



Marisa Fraser

12 June 2012

ABSTRACT

Research shows that although the representation of women in the workforce has increased over the past couple of decades, there are many industries that still remain male dominated. In addition, it is generally known that such male-dominated industries have minimal female representation at their managerial levels. One such male-dominated industry in South Africa is the air traffic control (ATC) industry. Women represent about 30 percent of the industry, which suggest their status in the industry is still quite low.

The purpose of this study was to examine male and female air traffic controllers' perceptions of factors that facilitate and constrain women's career advancement, and to determine whether there were any significant differences in their opinions. The study also identified what male and female air traffic controllers (ATCOs) think the industry can do to help prepare women for leadership positions in the industry, and how to eliminate barriers that may exist to women's career advancement.

Data for this study were collected through an online questionnaire adapted from Zhong's (2006) study on a convenience sample (N = 147) of male and female ATCOs in South Africa. The data analysis was executed by using factor analysis and analysis of variance (ANOVA). Content analysis was used to analyse the two open-ended questions.

The findings from the ANOVA suggest that there were four significant gender differences in perceptions of the Personal effort/External support, Attitude/Internal character, Equity, and Family issues. There also were significant differences in opinion on External support/Personal effort, Attitude/Internal character, Equity and Family issues, depending on the number of children the respondents had, and significant differences of marital status on the External support/Personal effort and Family issues. Finally, significant differences were found in the years' experience variable for Attitude/Internal character.

In response to the open-ended questions, most of the respondents suggested that the ATC industry should offer training programmes to improve awareness of possible barriers within the industry, as well as to offer advice on how to overcome them and improve their

leadership skills. This could be done by creating programmes on the knowledge and skills needed to advance one's career or by providing mentors or role models.

Future research could compare the perceptions of employees from different race groups and their perceptions of women's career advancement in male-dominated industries. It is also recommended that researchers conduct in-depth qualitative interviews together with the current questionnaire to evaluate perceptions of the career advancement of women more critically.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	i
DECLARATION	ii
ABSTRACT	iii
TABLE OF CONTENTS	v
LIST OF TABLES	x
1 CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT	1
1.1 BACKGROUND.....	1
1.2 PROBLEM STATEMENT	2
1.3 PURPOSE STATEMENT	2
1.4 RESEARCH QUESTIONS RELATING TO THE STUDY	3
1.5 RESEARCH OBJECTIVES	3
1.6 STATEMENT OF SIGNIFICANCE	4
1.7 UNIT OF ANALYSIS.....	4
1.8 IMPORTANCE AND BENEFITS OF THE PROPOSED STUDY	4
1.9 RESEARCH DESIGN.....	5
1.10 LIMITATIONS.....	6
1.11 ASSUMPTIONS	6
1.12 DEFINITION OF KEY TERMS.....	7
1.13 CHAPTER LAYOUT	7
1.14 CHAPTER SUMMARY	8
2 CHAPTER 2: THE NATURE OF THE ATC INDUSTRY	10
2.1 INTRODUCTION	10
2.2 THE AIR TRAFFIC CONTROL INDUSTRY.....	11
2.2.1 Background information on the ATC industry	11

2.2.2	The nature of the ATCO's work	12
2.2.3	Becoming an ATCO in South Africa	13
2.3	STRESSORS RELATED TO AN ATCO'S JOB	14
2.3.1	Factors causing stress in ATCOs in South Africa	15
2.3.2	Factors causing stress in ATCOs internationally	16
2.3.3	Burnout.....	17
2.3.4	Critique against the stressful nature of the job	19
2.4	HUMAN FACTORS AFFECTING ATCO PERFORMANCE	20
2.4.1	Performance perceptions	20
2.4.2	ATCO communication	21
2.5	WOMEN IN THE AVIATION INDUSTRY.....	22
2.5.1	Women in the ATC industry.....	23
2.6	CONCLUSION.....	24
3	CHAPTER 3: BARRIERS TO AND FACILITATORS OF WOMEN'S CAREER ADVANCEMENT	26
3.1	INTRODUCTION	26
3.2	CAREER ADVANCEMENT AND WOMEN.....	27
3.2.1	Career advancement and gender.....	28
3.2.2	Contradictions of career development theory	28
3.3	THEORIES ON WOMEN'S CAREER ADVANCEMENT	29
3.3.1	Gender-centred Perspective.....	30
3.3.2	Social Role Theory	31
3.3.3	Situation-centred approach/Organisation structured perspective	33
3.3.4	The gender-organisation system	34
3.4	BARRIERS TO WOMEN'S CAREER ADVANCEMENT.....	35
3.4.1	The glass ceiling.....	35
3.4.2	Self-imposed glass ceiling.....	36
3.4.3	Exclusions from networks.....	37
3.4.4	Lack of mentors.....	39
3.4.5	Management practices and policies	39

3.4.6	Cultural sexism and gender discrimination	40
3.4.7	Sexual harassment.....	42
3.4.8	Work-family conflict	42
3.4.9	Use of flexible work arrangements	44
3.4.10	Barriers women face in South Africa	45
3.4.11	Conclusion.....	47
3.5	FACILITATORS TO WOMEN’S CAREER ADVANCEMENT	47
3.5.1	South African workplace legislation.....	48
3.5.2	Mentors and networks	49
3.5.3	Organisational policies and culture.....	51
3.5.4	Work-family balance strategies	52
3.5.5	Training and development.....	53
3.5.6	Facilitators in South Africa specifically	54
3.5.7	Conclusion.....	55
3.6	CHAPTER SUMMARY	56
4	CHAPTER 4: THE RESEARCH METHODOLOGY	57
4.1	INTRODUCTION.....	57
4.2	RESEARCH PARADIGM AND MOTIVATION FOR USING A SURVEY DESIGN.....	57
4.3	RESEARCH DESIGN	59
4.4	POPULATION AND SAMPLE	60
4.5	THE MEASURING INSTRUMENT	61
4.5.1	Biographical information section.....	62
4.5.2	Factors that facilitate women’s career advancement (15 items).....	62
4.5.3	Factors that constrain women’s career advancement (15 items)	62
4.5.4	Gender issues in the workplace (13 items).....	63
4.5.5	Open-ended questions	63
4.5.6	Administration of the instrument	64
4.6	DATA ANALYSIS	65
4.6.1	Descriptive statistics.....	65

4.6.2	Standardising the questionnaire	66
4.6.3	Analysis of variance (ANOVA).....	69
4.6.4	Content analysis.....	69
4.7	FORMULATION OF THE RESEARCH QUESTION.....	69
4.8	ASSESSING AND DEMONSTRATING THE QUALITY AND RIGOUR OF THE PROPOSED RESEARCH DESIGN.....	71
4.8.1	Possible bias or error	71
4.9	RESEARCH ETHICS	71
4.10	CHAPTER SUMMARY	72
5	CHAPTER 5: DATA ANALYSIS	73
5.1	INTRODUCTION	73
5.2	BIOGRAPHICAL INFORMATION.....	73
5.2.1	Gender distribution	74
5.2.2	Race distribution.....	74
5.2.3	Age distribution.....	74
5.2.4	Marital status	75
5.2.5	Years' experience.....	75
5.2.6	Number of children	76
5.2.7	Level of education	76
5.3	EXPLORATORY FACTOR ANALYSIS	77
5.3.1	Facilitators.....	78
5.3.2	Constraints	80
5.3.3	Gender issues	81
5.3.4	Summary	82
5.4	ANOVA.....	82
5.4.1	Background	82
5.4.2	Research questions 1 and 2.....	83
5.5	RESEARCH QUESTION 3 AND 4	91
5.5.1	Research question 3	91
5.5.2	Research question 4	94

5.6	CONCLUSION.....	98
6	CHAPTER 6: DISCUSSION, CONCLUSION AND RECOMMENDATIONS.....	99
6.1	INTRODUCTION.....	99
6.2	SUMMARY OF FINDINGS	99
6.2.1	Biographical information	99
6.2.2	Results	99
6.3	RESEARCH FINDINGS AND DISCUSSIONS	101
6.3.1	Research question 1	101
6.3.2	Research question 2	103
6.3.3	Research question 3	104
6.3.4	Research question 4	106
6.4	LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH	107
	REFERENCES	109

APPENDICES

ANNEXURE A: Data collection instrument	119
ANNEXURE B: Informed consent form.....	123
ANNEXURE C: Permission to use existing questionnaire	125

LIST OF TABLES

Table 2.1: Top five stressors for Singapore, New Zealand and Canada	17
Table 5.1: Gender distribution	74
Table 5.2: Race profile of the sample	74
Table 5.3: Age profile of the sample	75
Table 5.4: Marital status	75
Table 5.5: Years experience	75
Table 5.6: Number of children	76
Table 5.7: Level of education	76
Table 5.8: Sample Characteristics (N=147)	77
Table 5.9: Factor loading for facilitators affecting women's career advancement (N=147)	79
Table 5.10: Factor loading for constraints affecting women's career advancement (N=147)	80
Table 5.11: Factor loading for gender issues affecting women's career advancement (N=147)	81
Table 5.12: Factor reliabilities and Means	82
Table 5.13: ANOVA results for External	84
Table 5.14: Means for gender: Personal effort/ External support	84
Table 5.15: Means for marital status: Personal effort/ External support	84
Table 5.16: Means per number of children: Personal effort/ External support	84
Table 5.17: ANOVA results for Character	85
Table 5.18: Means for gender: Attitude/ Internal character	86
Table 5.19: Means per year's experience: Attitude/ Internal character	86
Table 5.20: Means per number of children: Attitude/ Internal character	86
Table 5.21: ANOVA results for Equity	87
Table 5.22: Means for gender: Equity	87

Table 5.23: Means per number of children: Equity	88
Table 5.24: ANOVA results for Family Issues	89
Table 5.25: Means for gender: Family issues	89
Table 5.26: Means for marital status: Family issues	89
Table 5.27: Means for number of children: Family Issues	89
Table 5.28: ANOVA results for Lack of support	90
Table 5.29: ANOVA results for Gender issues	90

1 CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT

1.1 BACKGROUND

During the past decade, there have been a significant number of women who have entered the workplace. For example, in the United States of America (USA), the percentage of women working in management positions in 1995 was 41%, which was more than double the 19% in 1972 (Zhong, 2006). In South Africa specifically, a rapid increase in women's employment has also been apparent during the past few years. In 1960, women accounted for 23% of the workforce, whereas this amount increased to 41% in 2000 (Van Klaveren, Tjens, Hughie-Williams, & Martin, 2009).

Thus, the role of women in the workplace has witnessed a major transition within the last couple of decades. It is no longer safe to assume that specific occupations are more suitable for males than for their female counterparts (Cross & Linehan, 2006). Women have climbed the corporate ladder and have proven that they are just as capable as men in achieving the same goals. However, women are still poorly represented at various levels of organisations, especially managerial levels, because of factors constraining them from advancing their careers (Pichler, Simpson, & Stroh, 2008).

Although there has been an increase in the number of women who have entered the workforce and assumed management positions traditionally held by men (Weyer, 2007), there are still industries that are considered to be male dominated (Watts, 2009). One such industry is the air traffic control (ATC) industry. Research indicates that women encounter many issues in work-related factors such as the glass ceiling and gender discrimination, and in factors such as balancing family and work needs (Reddy, 2007). A widespread search on the University of Pretoria's library database of various literature resources (EbscoHost, Emerald, JSTOR, SA ePublications, Springerlink, Google Scholar, etc.) suggests that, although there is some academic research on factors constraining women's career advancement in the aviation industry, little attention has been given to women air traffic controllers (ATCOs) in the ATC industry.

Previous research indicates that little guidance has been given to women on overcoming work-related barriers, since most literature focuses on men's career advancement (Hamel, 2009; O'Neil, Bilimoria, & Saatcioglu, 2004). Research does suggest, however, that to understand women's career advancement it is important to acknowledge that women have different barriers to developing their careers than men (Hamel, 2009; Watts, 2009; Zhong, 2006). The glass ceiling and family demands are examples of the barriers among a range of constraints in the workplace that have resulted in women's lack of career advancement compared to men. Generalisations of perceptions that women work in occupations that are predominantly female are also common in some industries. These stereotypes might hinder the impact of career advancement among women in industries considered to be male dominated (such as the ATC industry) (Cross & Linehan, 2006; Michie & Nelson, 2006; Watts, 2009).

1.2 PROBLEM STATEMENT

Although there is research available on factors constraining the career advancement of women in various organisations (Hamel, 2009; Watts, 2009; Zhong, 2006), there are still gaps in the literature regarding the career advancement of women specifically in male-dominated industries such as the ATC field. Although the ATC industry has been open to women for several years, the representation of women in managerial positions has not changed much (Byrne, 2010).

This study therefore will attempt to address the perceptions of male and female ATCOs of the barriers and facilitators women face within the ATC industry in progressing toward managerial positions.

1.3 PURPOSE STATEMENT

The purpose of this study is to examine the perceptions of men and women on factors that facilitate and constrain women's career advancement within the ATC environment in South Africa (SA), and to determine whether there are any significant differences in their perceptions.

In addition, the study provides insight into barriers faced by women in male-dominated industries. The results provided can help offer information to women who are considering a career within a male-dominated industry, such as the ATC industry.

From the above, the following research questions were formulated in terms of the empirical study.

1.4 RESEARCH QUESTIONS RELATING TO THE STUDY

A research question inquires about the relationship among variables that a researcher seeks to know. Research questions are commonly used in survey studies and help to state the direction a study will take (Creswell, 2009). The following research questions were formulated with regard to this study:

- Are there any significant gender differences in men's and women's perceptions of factors that facilitate women's career advancement in the ATC industry?
- Are there any significant gender differences in men's and women's perceptions of factors that constrain women's career advancement in the ATC industry?
- Are there any significant gender differences in men's and women's perceptions of gender issues that constrain women's career advancement in the ATC industry?
- What can the organisation do to better prepare women for leadership positions within the ATC industry?
- What can the organisation do to help reduce the barriers to women's career advancement that might exist in the ATC industry?

1.5 RESEARCH OBJECTIVES

The objectives of the study were:

- To identify facilitators in the ATC industry assisting women's career advancement
- To identify what barriers exist in the ATC industry constraining women's career advancement

- To examine the perceptions of men and women in terms of gender issues that constrains women's career advancement in the ATC industry
- To examine what the ATC industry can do to prepare women for leadership positions
- To examine what the ATC industry can do to help reduce the barriers to women's career advancement

1.6 STATEMENT OF SIGNIFICANCE

The objective of this study was to determine the perceptions of male and female ATCOs regarding the barriers and facilitators that have an impact on the career advancement of women in the ATC industry. Another objective of the research was to compare what male and female participants believe the ATC industry can do to prepare women for leadership positions and, in the process, to reduce barriers to women's career advancement.

1.7 UNIT OF ANALYSIS

The unit of analysis of a study is the person or individuals from whom the researcher collects the data (Terr Blance & Durrheim, 2004). This study aimed specifically to investigate male and female ATCO's perceptions of the barriers to and facilitators of women's career advancement within the ATC industry. Therefore, the unit of analysis is the individual (male and female) ATCOs who are currently working in the ATC industry.

1.8 IMPORTANCE AND BENEFITS OF THE PROPOSED STUDY

For organisations to be successful, women need to be accommodated up to the highest echelons of management. This study highlights the barriers to and facilitators of career advancement of women in male-dominated industries. The study contributes to the academic literature by investigating which factors men and women believe are hindering the career advancement of women in the ATC industry, and addresses these factors in the hope of overcoming them. The study also contributes to the literature by ascertaining what men and women regard as facilitators of women's career advancement in the ATC industry in South Africa.

Highlighting the barriers to and facilitators of women's career advancement in the ATC environment will enable the industry to focus on specific problem areas and find ways how to address them. It will also assist in creating an industry environment that is more encouraging towards women's career advancement.

1.9 RESEARCH DESIGN

The purpose of the research design is to provide a general plan of how one will go about answering the research questions (Saunders, Lewis, & Thornhill, 2009). The key objective of the research design is to determine which statistical methods will be used to examine whether there are differences in men's and women's perceptions of the factors that facilitate or constrain women's career advancement in the ATC industry. A survey design was used to achieve the research objective.

The survey design is usually associated with the deductive approach and provides a numerical description of the attitudes, opinions or trends of a population (Creswell, 2009). It is a common strategy in business and management research, used to answer who, what, where and how questions. In addition, the survey design is regarded as trustworthy by people in general, as it is easy to explain and to understand (Saunders et al., 2009).

According to Creswell (2009) and Maree (2010), the advantages of the survey approach are that many respondents can complete it in a short amount of time, it is relatively cheap and easy to administer, the participant enjoys greater confidentiality, and populations can be reached across long distances.

The research design will be of an exploratory nature. As indicated by Saunders et al. (2009), the aim of exploratory research is to seek new insights into a problem. The research questions will be tested by means of descriptive and inferential statistics.

1.10 LIMITATIONS

The proposed study has several limitations related to the context and target population. Firstly, the study is limited to the context of the ATC industry and not the general aviation industry. Other jobs within the aviation industry therefore are excluded from this study. Secondly, this study will be conducted only in a South African environment, therefore it will not be considering other countries' male and female ATCOs.

Finally, the study is focused on women only and, although the perceptions of male and female ATCOs will be compared, the results will not provide any information that will benefit males in the industry. In addition, the results cannot be generalised to all women in other male-dominated industries, although it undoubtedly will help in getting perceptive insights on what women are dealing with across a number of male-dominated industries in South Africa.

1.11 ASSUMPTIONS

This study makes certain assumptions about the ATC industry, as well as about the male and female employees working within the industry.

Firstly, the study assumed that the industry is male dominated.

Secondly, it was assumed that there is a difference in the perceptions of men and women regarding the barriers to and facilitators of women's career advancement in the ATC industry. It is also assumed that female employees experience difficulties in overcoming these barriers working in a male-dominated environment.

The third assumption is that the various barriers and facilitators mentioned in the questionnaire exist within the ATC industry.

Furthermore, it is also assumed that a quantitative survey method is the most effective way to determine the results of this study.

1.12 DEFINITION OF KEY TERMS

The main terms that are used in this study are defined in this section below.

Air traffic controller (ATCO): A person who works in an airport control tower, providing pilots with technical aid and information in terms of air navigation to complete their flights safely and efficiently. An ATCO is responsible for the aircraft flight, which starts and ends between specified points, as well as for safety of the flight by preventing a collision with other aircraft (Turhan, 2009).

Barriers: “Barriers to career advancement interrupt the development of a person’s career and threaten the continuation of that person’s career path” (Hamel, 2009, p. 239).

Facilitators: Factors that enhance women’s career advancement.

Glass ceiling: “The glass ceiling constitutes an invisible barrier for women and minority groups, preventing them from moving up the corporate ladder” (Weyer, 2007, p. 483).

Male-dominated industry: An industry in which male norms and values dominate and men are in the majority at all levels within the organisation, except jobs deemed feminine (Cross & Linehan, 2006).

Old boy network: An “all-male group of colleagues who socialize inside and outside the work environment” (Zhong, 2006:108).

Work-family balance: Managing one’s career while at the same time looking after one’s family (Straub, 2007).

1.13 CHAPTER LAYOUT

The chapters are set out as follows:

Chapter 2: The nature the ATC industry

The aim of this chapter is to provide background information on the ATC industry, explain the nature of the work and how one becomes an ATCO in South Africa, look at women in the industry and finally discuss previous studies done in this industry.

Chapter 3: Barriers and facilitators to women's career advancement

This chapter will aim to provide a broader understanding of what barriers and facilitators affects women's career advancement in male-dominated work environments.

Chapter 4: The research methodology

The research design is described in this chapter. The aims of the research, survey method, sample, data collection and statistical processing of the data are discussed.

Chapter 5: Research results

This chapter is to test the research questions. The results of the study are reported by means of descriptive and inferential statistics.

Chapter 6: Conclusion, recommendations and limitations

The final chapter aims to integrate the results and draw conclusions from the findings. The limitations and recommendations made for future studies are also discussed.

1.14 CHAPTER SUMMARY

The background and objective, problem statement, research objectives, aim of the study, research design, and main hypotheses were discussed in this chapter. The motivation for

the study was the limited amount of research available on the career advancement of female ATCOs within the ATC industry in SA.

Chapter 2 deals with the nature of the ATC industry.

2 CHAPTER 2: THE NATURE OF THE ATC INDUSTRY

2.1 INTRODUCTION

Even though women have been involved in the aviation industry for almost as long as men, aviation has long been a predominantly male-orientated industry (Wilson, 2005). During the last century, gender-based discrimination, based on the belief that men are more qualified to be in certain roles, like leadership roles, than women was quite common in some male-dominated industries (Reddy, 2007). Any woman entering a male-dominated industry would thus most likely experience difficulties and biases. Examples of such biases include the belief that women have less strength than men, that they are less intelligent, and that they are considered to be an emotional liability (Wilson, 2005).

In this chapter, the ATC industry will be discussed to emphasise its importance within the larger aviation industry. This part will deal with the background of the industry, the nature of the work, how one becomes an ATCO in South Africa and the role of women in the industry.

Next, the chapter will focus on the previous research conducted on ATCOs in the ATC industry. It seems as if most of the research available on ATCOs focuses on the work stress and burnout experienced by ATCOs, given the nature of their jobs (Martinussen & Richardsen, 2006; Turhan, 2009; Van der Westhuizen, 2002). Little previous research on gender-related issues thus is available in this industry.

Therefore, the aviation industry at large will be discussed to determine whether any research has been done previously pertaining to barriers and facilitators within the larger aviation industry of which the ATC industry forms part of. Finally, the chapter will address some prominent female figures that have played a role in pursuit of other women entering this male-dominated industry.

2.2 THE AIR TRAFFIC CONTROL INDUSTRY

An important fact to consider is that a career in aviation is not only limited to being a pilot. Pilots are dependent on many technical personnel, such as ATCOs, who enable them to conclude their flights in a safe and efficient manner. The improvement of information technology in air transportation has led a big demand for the transportation of humans and freight by air (Turhan, 2009). This has led to an increased need for air traffic management over the past couple of decades. It therefore is no surprise that more and more air routes are being made use of to accommodate large numbers of aircraft (Martinussen & Richardsen, 2006).

To understand the role of women in the ATC environment, it is necessary to grasp the context of their job and know what it entails. Thus, the background to the industry, nature of their work, training and women's representation will be discussed.

2.2.1 Background information on the ATC industry

In the early 1930s there was no need for an organised system of air traffic management. To see and be seen was the basic method of avoiding other air traffic. However, it meant that a pilot could only fly in weather conditions in which he could see clearly (Van der Westhuizen, 2002).

By the late 1930s, aeroplane instrumentation had developed to a point that aircraft could fly at night, as well as in bad weather conditions. Instrumentation also made it possible for pilots to control their aeroplanes without making use of the horizon as a visual indicator. Because of the fact that all aeroplanes eventually needed to land at an airport, ATC quickly became a necessity at airports (Van der Westhuizen, 2002).

The first form of air craft control regulation consisted of an individual ATCO standing at a prominent spot on the runway, communicating to pilots by means of coloured flags. More and more airports then started making use of ATCOs and, as radio communication and instrument flying developed, ATC evolved into the occupation it is today (Van der Westhuizen, 2002).

2.2.2 The nature of the ATCO's work

It is said that the most important part of air traffic management is the controller. A controller is basically responsible for the safe take off, in-flight routing and landing of an aircraft between two specified points by providing it with clearances. ATCOs need to ensure safety by making sure there is no collision with other aircraft or obstacles (Turhan, 2009). Controllers safely combine each pilot's planned flight with many other planned flights that need to use the same airspace, runways and airports at more or less the same time. Controllers are required to provide clear and understandable communication with and coordination of pilots, as well as communicate with other controllers (Turhan, 2009). ATC has been described as a very "responsible and exciting career" (Singh, 2009, p. 1).

ATCOs control and direct aircraft via radio communications by using visual contact and secondary surveillance radars (used when aircraft cannot be seen), which ensures safe passage through their respective airspaces. An ATCO spends most of his/her time in the control tower, which is strategically situated next to the airport runway to provide a clear view of everything that is happening in the surrounding area. Most visual controlling occurs in these towers, and all take-off and landing clearances originate from them. Outbound, inbound or on-route aircraft movements are often monitored in separate rooms, with only a screen giving controllers information such as position, speed, altitude and direction. The equipment used by the controllers is a radar system providing an air picture display, telephones, intercoms, and primary crisis radios (Turhan, 2009; Van der Westhuizen, 2002).

Another feature of the job is shift work. ATCOs may be required to work normal working hours, peak hours, during the night or on weekends. In South Africa, an ATCO is ideally not allowed to work for more than two hours at one specific controller position. If possible, controllers are rotated from a position of high activity to a position of low activity and from a radar position to a non-radar position. Two continuous radar shifts are prohibited due to the intense nature of the job (Van der Westhuizen, 2002). This is because the radar controllers are usually in a more advanced position in which they can see the true movement of the aeroplane on his/her radar display. The radar controllers are responsible

to guide the pilot through the safest route possible by helping the pilot navigate through bad weather conditions or any other potential hazard that might exist (Sanyal, 2009).

The reason for providing the abovementioned information is to emphasise the intense concentration this type of work demands. Some work characteristics of air traffic controllers are assumed to be highly stressful. In fact, Singh (2009, p. 1) said the following: “ATC requires a very tough and steely nerve because your words and actions can make or break not one but so many lives on board an aircraft.”

From the above, one can understand the enormous responsibility that comes with being an ATCO. Any errors and mistakes that might occur are likely to have disastrous consequences (Martinussen & Richardsen, 2006). Because of this responsibility that goes hand in hand with being an ATCO, the training and selection processes for ATCOs are of fundamental importance (Turhan, 2009).

2.2.3 Becoming an ATCO in South Africa

South Africa has contracted its air traffic operations to a private organisation, Air Traffic Navigational Services (ATNS), to enable South Africa with a widespread Air traffic management system. They are the sole providers of ATCO training and other related services inside South Africa. ATNS seeks continuous growth for South Africa’s ATC industry by ensuring safe air traffic within the country. It is therefore no wonder that South Africa’s ATC industry is regarded as being on par with that of Europe and North America (Schroeder, 2009).

The following are the minimum requirements to gain access to their training programme (ATNS, 2011):

- Minimum age of 18
- Grade 12 with Maths and English (Higher Grade D or Standard Grade C or level 4 upwards)
- South African citizen
- Medically fit

The ATCO programme provides candidates with an opportunity to obtain the relevant exposure needed to qualify as an ATCO. The ATCO trainee programme consists of the following phases: a bursary scheme, the ATC Leadership and ATC aerodrome course, a validation phase, and lastly accepting an ATCO position (ATNS, 2011).

Under the bursary scheme, the learner must complete an ATS (air traffic service) rating. Once a learner has completed this phase one rating, he/she would have graduated with an ATSO (Air Traffic Service Operator) license rating qualification. To ensure that the learner then becomes an ATCO, he/she needs to complete phase two, in which this rating needs to be validated in operational positions.

To validate the ATSO rating and continue with the ATCO programme, ATNS offers the bursary holders an 18-month fixed contract to ensure that they receive the necessary practical training. During this time period, the bursary holder must complete all the necessary validations required to perform the solo duties of an ATSO. Feedback is also provided on a continuous basis during this 18-month contract. Next, the trainee has to sign an aerodrome training contract, which includes aerodrome exposure, rating training and validation. The trainee is then required to work for ATNS for five years after the aerodrome validation (ATNS, 2011).

Finally, after completing the above mentioned, ATNS will offer the ATCO permanent employment. On acceptance of the offer, the ATCO trainee becomes a fully-fledged ATNS ATCO.

2.3 STRESSORS RELATED TO AN ATCO'S JOB

Singh (2009, p. 2) is of opinions that: "this profession is regarded as the most challenging, toughest and most stressful job in the world after the job of neurosurgeon". A comment like this probably suggests why most of the literature on ATCOs is focused on the stressors of the job. This part of the chapter will discuss the factors causing stress in ATCOs around the world.

2.3.1 Factors causing stress in ATCOs in South Africa

In a study done in South Africa, Van der Westhuizen (2002) tried to determine the work stress of ATCOs employed in the South African Air Force, as well as a group of ATCOs working in the private sector. Her results indicated that age played a major role in ATCOs experiencing stress. Her findings suggested that the age group of 19 to 25 showed lower stress levels. She is of opinion that this might be because of the smaller workload and responsibility of people in that age category. Another finding in her study was that ATCOs in the civil sector had significantly higher stress level than those employed by the South African Air Force. Van der Westhuizen (2002) suggested that this might be because of the higher workload typically found in the private sector in comparison to the civil sector.

Van der Westhuizen (2002) furthermore classified the top five stressors amongst ATCOs as the following: fear of causing an accident; peak time air traffic; instrument limitation; job overloading; and time pressure.

2.3.1.1 *Fear of causing an accident*

Controlling and directing an aircraft in air traffic always involves the life of at least one person – the pilot. However, depending on the aircraft, the number can range from anything from one to 500 lives partly dependent on the ATCO. The mere thought of this is already stressful. If an ATCO is fully responsible for a flight accident, he/she can face disastrous consequences (Van der Westhuizen, 2002).

2.3.1.2 *Peak traffic*

“A visit to an ATC centre by anyone who is not familiar with ATC, especially at peak traffic times, will create an overriding impression of chaotic and extremely high-pressure working conditions” (Murray, 2006, p. 52).

It is suggested that the higher the workload, the higher the stress levels of an ATCO. It can therefore be assumed that the workload during peak traffic hours will be more stressful than during regular hours. This is because there are more aeroplanes to control, larger

amounts of human life to be accountable for, more decisions to be taken and thus also bigger chances of making a mistake (Van der Westhuizen, 2002).

2.3.1.3 *Equipment constraints*

Since ATCOs are dependent on their equipment to communicate with pilots, they are restricted by the control tower and the tower's equipment. The controller cannot literally see what he/she is doing and thus the consequences would be disastrous if the equipment fails. Although there will always be extra equipment in case of such an emergency, it still remains a stressful option, as it will constrain the fast and effective process of controlling the air traffic (Van der Westhuizen, 2002).

2.3.2 Factors causing stress in ATCOs internationally

In an international study done by Shouksmith and Taylor (1997), they explored the impact of perceived stressors as viewed and influenced by different cultures. The starting point of their study was studies done on stress in Canadian ATCOs by McBride, Lancee, and Freeman in 1981 and New Zealand ATCOs by Shouksmith and Burrough in 1988. The results of these studies showed that a number of unique issues relating to each country emerged from the two studies. For example, Canadian controllers were more concerned about bilingualism, which had little relevance for New Zealand controllers. Also, Canadians were much more concerned about bad weather conditions than New Zealand controllers, given the generally temperate climate of the latter country (Shouksmith & Taylor, 1997).

Although both Canada and New Zealand are considered Western countries, there are a number of different stressors relating to ATCOs in the two countries. Shouksmith and Taylor (1997) wanted to investigate this phenomenon further by comparing the differences between Western and Oriental cultures. They therefore compared a sample of Singaporean ATCOs to the results of the studies done in Canada and New Zealand. The results were as follows (Shouksmith & Taylor, 1997):

Table 2.1: Top five stressors for ATCOs in Singapore, New Zealand and Canada

Top five stressors		
Singapore	New Zealand	Canada
Fear of causing accidents	Equipment limitations	Equipment limitations
Peak traffic conditions	Peak traffic conditions	Peak traffic conditions
Equipment limitations	Reporting co-worker's errors	Fear of causing accidents
Fear of slowing down as a controller	General work environment	Bad weather
Relationships with local management	Fear of causing accidents	General work environment

The results showed that the two Western countries shared a 56% common variance, whereas New Zealand and Singapore shared a 35% variance and Canada and Singapore shared a 21% variance.

According to Shouksmith and Taylor (1997), these differences in stressors in different cultures occur because of the greater power-distance of Singapore versus Canada and New Zealand. They furthermore suggest that the big difference between Canadian ATCOs and ATCOs from Singapore is the fact that Canada lies further from Singapore than from New Zealand.

From the above it is clear that the location of one's country, as well as environmental factors, can have a significant impact on an ATCO's job stress.

2.3.3 Burnout

Martinussen and Richardsen (2006) did a study of Norwegian ATCOs to determine the levels of burnout among ATCOs compared to other professions. Their results showed that even though a number of studies regard the nature of the ATCO's work as being particularly stressful (Martinussen & Richardsen, 2006; Turhan, 2009; Van der Westhuizen, 2002), the overall level of burnout was not higher for ATCOs when compared with other occupational groups in Norway. An interesting discovery was that ATCOs

scored significantly lower on exhaustion, which is considered to be a key dimension of burnout, when compared to journalists and building constructors (Martinussen & Richardsen, 2006).

Despite the above mentioned findings, there definitely are many aspects of an ATCO's occupation that are regarded as extremely stressful. Martinussen and Richardsen (2006) are of the opinion that the comprehensive selection and training procedures that an ATCO needs to undergo can be used to substantiate the low levels of burnout found in their study in comparison to others industries. It was previously mentioned how intense and comprehensive ATCO training is and that candidates can fail their training if they do not perform well enough. Therefore, the above mentioned study assumed that only the best individuals capable of coping with the stressful nature of the job will be selected to continue.

Similarly, Van der Westhuizen (2002) explains that the emotions of experiencing stress are dependent on one's personality and not on the job itself. For example, Type A personalities are commonly known to be more prone to stress-related health problems than other personality types. It therefore also can be assumed that one's personality type can have an impact on the way one manages stress levels (Van der Westhuizen, 2002).

Therefore, since burnout is a result of both individual factors (personality types) and situational factors (selection and training procedures), Martinussen and Richardsen (2006) suggest that burnout may develop as a result of a poor job-person fit and not necessarily as a result of the job itself. However, this does not imply that ATCOs are unaffected by job stress. The abovementioned authors still found that many ATCOs were exhausted by the end of the day. Some even reported experiencing health problems such as sleep disturbances and back problems caused by the many hours spent in front of a screen (Martinussen & Richardsen, 2006).

Another finding in their study was that ATCO job stresses become more demanding with age and experience (Martinussen & Richardsen, 2006). This was also confirmed by the findings of Van der Westhuizen's (2002) study.

Since factors such as stress and burnout can have consequences for both men and women with regard to work performance and quality of work, it is important to prevent workers from developing such job-related constraints. It therefore is important that air traffic management monitor and resolve workplace stressors to determine how they can be decreased. A supportive work environment may contribute to better efficiency in improved individual work performance and ultimately in better organisational effectiveness (Martinussen & Richardsen, 2006).

2.3.4 Critique against the stressful nature of the job

Murray (2006) suggests that it is myth to believe that ATC creates more stress than other occupations. He is of opinion that it is factors inherent to the job, rather than the job itself, that results to the stressful experiences.

For example, he suggests that the shift work could cause domestic problems, as it results in people being away from home for unconventional hours, since ATC is regarded as a 24/7 operation (Murray, 2006).

Another finding (Rodgers, 1992 in Murray, 2006), from a study done in the USA, suggests that operating under high workload conditions, and not the tense nature of the job, is among the factors that result in ATCOs making errors in ATC. This finding immediately led to the US department of transport hiring an additional 1 000 ATCOs on the basis of the seriousness of this pronouncement.

Langan-Fox, Canty and Sankey (2009) found that a reduction in the workforce led to a decrease in ATCO motivation and an increase in ATCO stress. The reason for this is that as the workload decreased, boredom increased, as the ATCOs felt that they had less control over their jobs. According to these authors, individuals who operate in high-stress environments feels more in charge of what happens around them if they have more responsibility over it (Langan-Fox et al., 2009)

It is clear that there are many opinions pertaining to stress in ATC. Although much research has been done to study this phenomenon, it seems as if there still is much more scope for studying these aspects.

2.4 HUMAN FACTORS AFFECTING ATCO PERFORMANCE

2.4.1 Performance perceptions

In a study in Turkey by Turhan (2009), focus was placed on the job performance perceptions of ATCOs. Turhan (2009) lists the following as the main factors that influence controllers' performance perceptions:

- **Individual differences:** Differences in individuals are likely to create differences in work performance. For example, an individual's learning potential or memory and understanding of a task can result in important differences when it comes to difficult tasks. In addition, certain personality factors such as nervousness or anxiety experienced during key events can also have an impact on an individual's performance, especially during high workload stages.
- **Information processing:** People process information as inputs supplied from the external environment. Information processes are affected by the work and social environments humans operate in. Therefore, workplace design must focus on increasing the quality of information processing to improve the quality of decision making.
- **Organisational climate and job satisfaction:** ATCO performance is affected by the motivational organisational climate, managerial hierarchy, work conditions, reward systems, etc. International work standards should be applied to ensure controller work satisfaction.
- **Communication and teamwork:** It is said that communication and teamwork are the centre of a controllers' job operations. Therefore, any lack in these two areas can result in negative impacts on job performance.
- **Automation and workplace design:** Since automation is expected to improve workload issues and capacity, controllers need to trust the automated equipment. All

such designs should be compatible with the controller's physical and mental structure.

- **Stress and workload:** Higher workloads are expected to increase the possibilities of workplace errors. Higher workload equals more stress. It therefore is believed that beneficial stress and workload capacity can support controllers' motivation and job performance.
- **Selection and training:** Well-selected candidates tends to display higher job performance in air traffic management, which implies that selection and training programmes play a key role in organisational performance (Turhan, 2009).

Turhan (2009) distributed a questionnaire to ATCOs working at five major Turkish airports to determine how they viewed controller performance in relation to the abovementioned factors. High correlations were found in terms of teamwork, situational awareness, and the adaptation to rules and new techniques. A significant relationship was found between perceived performance and age and experience. The implication therefore is that as controllers get more experienced with age, their perceptions relating to the job improve (Turhan, 2009).

Selection and training factors were also found to make a big difference in performance. Well-designed selection and training were said to make a significant difference in ATCO performance (Turhan, 2009).

2.4.2 ATCO communication

A much studied aspect in ATC is that of improving voice and radio communication between the pilot and the ATCO. It is believed that communication problems occur because of complex ATC messages that overload pilot memory (Prinzo & Morrow, 2002).

A possible reason why communication channels form such an important part of ATC is the Tenerife airport disaster that occurred on 27 March 1977. It is believed that the cause of the collision between the two Boeing 747 aircraft (KLM Flight 4805 and Pan Am Flight 1736) was because of miscommunication in the English language that occurred between

the pilot and the ATCO. The accident happened on the runway of the airport, where the two planes hit each other on the ground because they had no visual of the runway due to extremely bad weather conditions (Murray, 2006).

From the above, it is clear why aviation communication is a crucial aspect in the safe operation of pilots and ATCOs. Crashes like that mentioned above were the reason for developing standard operating terminology used to ensure global understanding of communications (Murray, 2006). To improve communication between pilots and ATCOs, the concept of crew resource management (CRM) has been researched widely and implemented in aviation (Murray, 2006).

CRM was first introduced for its crew by United Airlines in 1981 (Murray, 2006). CRM exemplifies the limitations of human performance and promotes a culture-free approach, which focuses on error management to create a universal foundation that can be endorsed by all crew involved in the safe management of an aircraft (Wilson, 2005). It involves a wide range of knowledge, skills and attitudes, including situational awareness, decision making, problem solving, teamwork and communication. It is focused more on the cognitive and interpersonal skills needed to communicate effectively with other crew than with technical knowledge (Murray, 2006). CRM is now a mandatory requirement and research done on it has led to comprehensive training programmes for pilots and air traffic controllers (Wilson, 2005).

2.5 WOMEN IN THE AVIATION INDUSTRY

When looking at gender-related studies in the aviation industry, they are focused mostly on women pilots (Mitchell, Kristovics, & Vermeulen, 2006; Mitchell, Kristovics, Vermeulen, Wilson, & Martinussen, 2005; Mitchell, Vermeulen, & Naidoo, 2009; Vermeulen & Mitchell, 2007), and not so much on female ATCOs.

Although the exact number of female pilots is unknown, research suggests that female airline pilots in South Africa amount to about three to four percent of the total (Mitchell & Kristovics, 2005), indicating that not only the ATC section, but also the pilot section of the aviation industry is male dominated.

The general aviation industry has historically been male dominated, and still seems to remain so in modern times. Mitchell et al. (2006) suggest that this might be because of the industry's slow recruitment, advancing and training of female pilots, despite equal opportunities and affirmative action legislation. Mitchell *et al.* (2006) propose that the low female representation might be due to the fact that the time consuming and expensive training to become a pilot suggests that only women with the focus and drive – similar to what are socially accepted of men – are able to achieve their career goals (Mitchell et al., 2006). Other case studies of male and female pilots confirm this and add that some female pilots have adapted their behaviour to the masculine culture by “laughing at sexist jokes, going for drinks with the boys, and feeling as if they have to perform far beyond that of males” (Mitchell & Kristovics, 2005, p. 2).

Although attempts have been made to address the pilot imbalance, their effectiveness has been frequently debated (Mitchell & Kristovics, 2005). Research on bias and stereotypes in the industry suggest that, despite many attempts to overcome gender issues, they continue to exist throughout the occupation (Mitchell et al., 2006). In addition, there has been much condemnation of equal opportunity legislation and policies, as it is believed that these enable women to have distinct advantages in terms of employment and promotion opportunities. Thus, successful females' respect is earned grudgingly and their advancement, at times, is met with negative comments (Mitchell & Kristovics, 2005).

Although the pilot section of the aviation industry differs from the ATC section in a number of ways, it appears that they share some similarities regarding barriers to women's career advancement. However, for the purpose of this study, the focus will be on women in the ATC environment, and not any other women working in the broader aviation industry.

2.5.1 Women in the ATC industry

On reviewing the literature it was found that the first female ATCO was Mary Chance VanScyoc who started working in control towers in the USA in June 1942 (Wings over Kansas, 2010), when ATC was still in its early years. However, in some countries the occupation was only opened to women as recently as twelve years ago (Byrne, 2010).

Back in the time of Mary VanScyoc, the first ATCOs attended classes for 60 to 90 days before being employed either in towers or in centres as assistant ATCOs. Early controllers were trained on the job as trainees for a couple months, after which they became assistants. The controller could be promoted trainee to tower assistant, to centre assistant, to full controller in the tower, to full controller in the centre. This helped ensure that controllers were getting experience in more than one tower, as well as in the centres (Wings over Kansas, 2010).

Although ATC is a career field that historically has been underrepresented among women (Langan-fox et al., 2009), attempts have been made to rectify this. It is said that the representation of women globally has now reached almost 30% (The Ninety-Nines Inc, 2011). In SA specifically, the representation of women is at about 29% (ATNS, 2012) which is more or less on par with the rest of the world. However, these numbers are still very small. Some reasons for this might be work-family conflict and sexual harassment, which have been indicated globally by female ATCOs in many organisations (Byrne, 2010). In addition, stress and burnout also seems to be a big factor, since some characteristics of ATCOs' work are assumed to be particularly stressful (Martinussen & Richardsen, 2006).

So why do women attempt to enter such a male-dominated and stressful environment? The Ninety-Nines Inc, which is an organisation that promotes gender equality in aviation, suggest the reasons might be anything from having a fascination with aviation, to wanting to change career paths. They further suggest that some women seek a challenging career and that ATC provides them with such demanding challenges (The Ninety-Nines Inc, 2011).

2.6 CONCLUSION

This chapter dealt with the nature of the ATC industry. The background of ATC, requirements for becoming an ATCO, previous studies done, women in the industry as well as the broader aviation industry was discussed.

Overall, although many attempts have been made to make the ATC environment more gender equitable, and even though The Ninety-Nines Inc (2011) agrees that a 30% representation of women is acceptable, there still is a long road ahead to make it completely gender equal.

As can be concluded from previous studies that have been done, it appears that the current literature focuses more on stress-related factors, burnout and human factors within the ATC industry than on factors constraining the career advancement of women. The next chapter therefore will address barriers and facilitators that are found specifically in male-dominated environments in order to explore the experiences and challenges women face in such industries.

3 CHAPTER 3: BARRIERS TO AND FACILITATORS OF WOMEN'S CAREER ADVANCEMENT

3.1 INTRODUCTION

Although the ranks of women in most industries have increased over the last couple of decades, many industries still remain predominantly male orientated (O'Neil, Hopkins & Bilimoria, 2008). In addition, even though almost half of the workforce these days consists of women, the number of women in mid-management and senior management still remains underrepresented (Reddy, 2007; Weyer, 2007; Zhong, 2006).

In South Africa, the latest statistics show that women make up 52% of the adult population, with a 41% representation in the workplace (Lewis-Enright, Crafford, & Crous, 2009). However, they only hold a small percentage of influential positions. In a sample of 339 JSE-listed companies, it was found that women made up 4.4% of chief executive officers and managing directors, 5% of chairpersons, 15% of directors, 21.6% of executive managers and 35% of senior government managers (Business Women's Association of South Africa, 2011).

Although the above statistics refer to South Africa, this underrepresentation of women is found everywhere (Lewis-Enright et al., 2009). Not surprisingly, little guidance exists for women on how to overcome barriers to their career advancement. In fact, a great deal of the theory that guides career development research is only found in studies of men's careers in professional positions. While for the most part ignoring the career experiences of women, the literature pays little attention to how to overcome barriers of career advancement in organisations – “a challenge many women and men both face over the course of their career development” (Hamel, 2009, p. 239).

Not only do women still continue to be unequally represented in higher positions, it seems as if they also are hired, rewarded and promoted unequally (Cross & Linehan, 2006). However, many executives and managers are of opinion that women have not made significant progress because of their limited backgrounds, skills and work experiences.

They point out that the slow climb of women to more senior positions is because of a lack of skills amongst them, and not because of biased hiring (Zhong, 2006).

As a result, more women have invested in higher education (Singh, Vinnicombe, & James, 2006). Education is said to assist women in their quest for managerial advancement (Cross & Linehan, 2006) and is viewed as a useful route to the top level of management. It is said that, globally, more women now have higher levels of education than ever before (Sheridan, 2007; Zhong, 2006). Still, even though most employees these days get promoted based on their performance, a gender gap still exists in the rate of promotions, with women pulling at the short end, especially in male-dominated industries (Chowwen, 2007; Zhong, 2006).

The purpose of this chapter is to look into various barriers and facilitators experienced by women in male-dominated environments. The chapter starts by explaining some of the theory that guides women's career advancement. Thereafter, barriers women encounter that tend to constrain their career advancement are discussed. The purpose of this is to promote an understanding on the issues women face in male-dominated work environments.

On a positive note, however, many organisations have undertaken a number of approaches to create a more gender-equitable work environment (Straub, 2007). Thus, the facilitators to career advancement will also be discussed in this chapter to see what organisations are doing to assist women in their quest for a more equitable workforce.

3.2 CAREER ADVANCEMENT AND WOMEN

Research suggests that the situation of women in employment steadily improved along with their educational accomplishments (ILO, 2011). However, to understand the attitudes and experiences of women's career advancement in the workplace, it is necessary to look into the various concepts and theories affecting it.

The career advancement of women has been influenced in the past by economic and social transformation (ILO, 2011). Before discussing the barriers and facilitators, it is

necessary to understand the concept of career advancement and know what it implies for women.

Next, it is crucial to understand the theories underlying the concept of women's career advancement and how it differs from that of their male counterparts. Information explaining how feminist theory helped shape the perception of women in the workplace will also be discussed. This will provide more information on why traditional stereotypes are hard to overcome.

3.2.1 Career advancement and gender

Career development is defined broadly as an ongoing process through which an individual progresses through a series of work-related experiences that span the course of a person's life (Greenhaus, Callanan, & Godschalk, 2007, O'Neil & Bilimoria, 2005). Climbing the corporate ladder is an expression representing the upwards linear movement an individual assumes in his/her career life span (Mavin, 2001). It refers to starting a career in a fairly low position, and then systematically progressing to a higher level, with added status and responsibility, by means of promotions. Lastly, the end of a career is characterised by retirement (Mavin, 2001).

3.2.2 Contradictions of career development theory

Classic career development models like the above mentioned one have shaped career theory over the past years (O'Neil & Bilimoria, 2005). However, the dilemma of these theories is the fact that most of these career paths are based mainly on the experiences of white middle class males. Thus, the theory mostly focuses only on their age and career stages with little reference to women, especially working women in modern times (Mavin, 2001).

Mavin (2001) suggest that one of the reasons why the literature focuses mainly on men's careers is the common underlying assumption of researchers viewing women merely as casual workers who enter the workforce only until marriage or childbirth. Therefore, since traditional career development models have been focused mostly on the career

experiences of men, they are mainly applicable to men and not to women (Mavin, 2001). This is because critics believe that a woman's career path is non-linear and interrupted by moving in and out of the workplace as a result of her family responsibilities (Zhong, 2006). Thus, the traditional career model fails to consider the career breaks that most women experience in their working lives (Mavin, 2001).

Recent studies on women's career development suggest that women's career stages progress in an opposite manner to that of their male counterparts' "stability, maintenance and decline", and that most women find a "renewed sense purpose, energy, and increased vitality for work pursuits in middle adulthood" (O'Neil & Bilimoria, 2005, p. 170). It therefore is not uncommon for women to return to work once their children are mature enough to fend for themselves.

Research makes it clear that, although men's career models have remained rather consistent over the years, women's career approaches continue to jump off the career bandwagon as time and responsibilities influence their career viewpoints (Mavin, 2001). O'Neil and Bilimoria (2005) further explain that the reason why women's career models cannot be compared to that of their male counterparts is because of their broader life contexts.

Because of the abovementioned contradictions to career theories, it is necessary to explore different theories pertaining to men and women and their role in the workplace to enhance the understanding of women's limited representation in certain industries.

3.3 THEORIES ON WOMEN'S CAREER ADVANCEMENT

There are many theories on the differences regarding barriers to women's career advancement and opportunities inside organisations. Some of these theories indicate that women's self-perceptions may cause them to view themselves as incapable to lead an organisation, while others suggest that certain factors that are believed to be inherent to women prevents them from progressing up the corporate ladder (Reddy, 2007).

Some of the theories discussed in this section include Gender-centred Perspective Theory, Social Role Theory, the Situation-centred/Organisation-structured approach, and the Gender-organisation system.

3.3.1 Gender-centred Perspective

The gender-centred perspective originated from the belief that leadership roles were traditionally held by men. The theory suggests that the reason for women failing to advance is because of factors internal to women, such as attitudes, behaviours or certain qualities. For example, women are said to be more emotional than men (Zhong, 2006). Thus, the theory suggests that men and women are inherently different and therefore cannot be motivated by the same means (Reddy, 2007).

Much research has been conducted on women's career advancement using the gender-centred perspective. Kabacoff (2004) took a diverse sample of male and female CEOs from different companies to compare their leadership behaviours. The findings showed that, since women are more emotional in their approach, they make more empathetic leaders. In addition, they also have more patience, read the organisational climate better and are more detail conscious than men. It is said that female executives work with "a greater degree of energy, intensity and emotional intelligence and have greater capacity to keep others enthusiastic and involved" (Kabacoff, 2004, p. 17). Finally, it is suggested that women are solution driven.

On the downside, however, Kabacoff (2004) suggests that women find it difficult to tolerate other women. This might be because they find it more difficult than men to handle differences or conflict in an objective manner. It thus can be seen from the literature that the research definitely suggests that there are differences in people with regard to their gender. However, this need not be a barrier, as these differences can be used to achieve competitive advantages in organisations.

Still, as Reddy (2007) suggest in her study, since men and women are inherently different, failure by organisations to recognise this basic premise might cause them to try to motivate men and women in the same way. This might have a major negative impact in the

progression and retention of women in the workplace. Her findings suggest that women are motivated by the following (Reddy, 2007):

- Flexible work schedules, like working from home or part time work
- An organisational culture in which women are valued
- Limited old boys' networks
- Training and development opportunities
- Mentorships by men and women from different race groups
- Family-friendly policies such as day care facilities

Rindfleish and Sheridan (2003) provide criticism of the gender-centred approach, as they suggest that this approach tends to stereotype women as being less able than their male counterparts to possess the skills, knowledge and abilities needed to function effectively in a management position. They suggest that even though women have become more open to women managers, this theory still tends to constrain men from viewing women as competent for managerial roles (Rindfleish & Sheridan, 2003).

3.3.2 Social Role Theory

The central element of Social Role Theory suggests that both men and women are assigned different roles in the world because of their gender. For example, women traditionally used to be homemakers, while men were breadwinners. Given these traditionally assigned social roles, there now are specific expectations held of individuals who occupy specific gender roles in society (Weyer, 2007).

Similar to the social role assigned to gender, leaders inside organisations are also bound by leader roles related to gender. These organisational leadership roles might be because of traditional beliefs. Social Role Theory thus argues that men and women apply different influences on leadership roles in terms of the expectations that are held by their traditional social roles. Thus, gender roles are stereotypical in nature because of their social backgrounds (Weyer, 2007).

In their experimental study, Vinkenburger, Van Engen, Eagly and Johannesen-Schmidt (2011) investigated stereotypes related to the importance of transformational leadership styles for the promotion of women and men to different levels in an organisation. It is believed that transformational leadership styles consist of four elements, namely Individualised consideration, intellectual stimulation, inspirational motivation, and idealised influence (Vinkenburger et al., 2011).

It was found that inspirational motivation (to express optimism about goals and future states) is more important for the promotion of male managers than female managers. For women, inspirational motivation and individualised consideration (where the leader is concerned about each follower's needs and concerns individually) were perceived as equally important to progress in their careers (Vinkenburger et al., 2011).

It is said that, although society has changed tremendously over the past half a century, research indicates that it has not changed much with regard to gender stereotyping. In fact, there are even some suggestions that sex stereotyping has increased in recent years. Therefore, traditional social roles have seeped over into organisational roles and therefore influence organisational role expectations about women and their ability to perform certain functions in organisations (Weyer, 2007).

In their study, Vinnicombe and Singh (2002) made an interesting discovery. In researching sex stereotyping, they found that most men in their study reported that cultural attitudes in organisations were changing towards the advancement of women. Men felt that women were valued, that they fared as well as men in their roles, and they quickly got back on track with their jobs after childbirth. On the other hand, however, most females in their study reported that they were subject to continuing discrimination and that the start of a family would result in the end of a career (Vinnicombe & Singh, 2002).

From the above it seems as if men are very unaware of the challenges most women face in their working lives. Another interesting discovery in their study was the fact that both men and women preferred a male boss over a female one (Vinnicombe & Singh, 2002). In her study, Weyer (2007) suggested that men are preferred as leaders because they do tasks that require certain behaviours considered masculine. Women who become leaders

are believed to behave in a manner that is not expected from their gender because of a fear of negative stereotypes of them (Weyer, 2007).

3.3.3 Situation-centred approach/Organisation structured perspective

The situation-centred approach or organisational structure perspective, suggested by Kanter (1997), argues that masculinity and femininity are associated with level and position, rather than gender, and that senior jobs require masculine strengths (Vinnicombe & Singh, 2002).

Kanter (1997) in Diamond (2007) calls this above mentioned masculinity and femininity attributes calls it the interactions between the dominant group (men) and the token group (women). The dominant group increases the differences between them and the token group, which has negative outcomes for women, such as performance pressures, exclusion from interaction with the dominant group, and being stereotypically viewed as women instead of managers. In addition, women experience different pressures than men, as there is a general belief that women need to modify their behaviour to be more like men in the workplace (Diamond, 2007). In their study, Vinnicombe and Singh (2002) found that less educated women regarded themselves as following a feminine career style, whilst women with postgraduate degrees viewed themselves as having a masculine style.

This theory further proposes that organisational structures and processes may hinder career advancement for women, as those with access to advantageous situations at the top of the organisation have access to important people and resources. These positions are usually occupied by men, as women tend to be in the lower, supportive roles in organisations (Vinnicombe & Singh, 2002). In her study on why women leave the workplace, Reddy (2007) found that an organisational structure that remains inflexible towards women is a big culprit in their decisions to resign and find work elsewhere.

Fagensen (1990) in Reddy (2007) provides criticism of this theory because it often ignores factors outside the organisation that have an impact on women's behaviour at work.

3.3.4 The gender-organisation system

The Gender-organisation system (GOS) approach attempts to bring together the person-centred and structural approaches (Diamond, 2007) and suggests that both organisational structure and gender can shape women's behaviour in the workplace (Reddy, 2007). This perspective proposes that the organisational context is more important than the structure that organisation operates in. The context includes the organisation's culture, ideology, policies and history, together with its structure.

The underlying theory suggest that organisations are located within societies with specific cultural values, histories, expectations and stereotypes regarding appropriate roles for men and women. In doing so, they affect the internal structures and processes of organisations. For example, affirmative action laws affect the way women are treated and viewed in organisations. GOS then suggests that, if one wants to understand why women are experiencing limited success in the corporate world, one should try to identify the characteristics of that organisation's context and social system and how these are effecting men's and women's attitudes and behaviours (Reddy, 2007).

In a study done by Maxwell, Ogden and McTavish (2007) on women's development in a finance and retail industry, they found five important enablers of female managers' career advancement. These were benefits the business experiences as a result of having a mixed-gender managerial composition, transformational management styles, supportive organisational cultures, flexible work arrangements, and accessible training opportunities. In addition, they suggested that an important feature in the context of the organisation's architecture of advancing females' careers was the dominant management styles and cultures. Therefore, if the culture is open to female development, the chances are that women will have a better chance of advancing their careers (Maxwell et al., 2007).

This study supports a combination of the abovementioned theories, in which women's behaviour in the workplace depends on the context, structure and gender roles traditionally assigned to them. This comprises the gender-organisation systems theory, which takes into account both individual and organisational factors, as well as social role theory, which depends on how men feel about women's roles.

3.4 BARRIERS TO WOMEN'S CAREER ADVANCEMENT

In many male-dominated industries, women still face a number of barriers that constrain their career advancement (Tlaiss & Kauser, 2010). These barriers have led to the underrepresentation of women on various levels in organisations.

Some of the most prominent barriers to women's career advancement in the theory consulted include the following: the glass ceiling, the self-imposed glass ceiling, exclusion from networks, lack of mentors, management practices and policies, cultural sexism, gender discrimination, sexual harassment, work and family conflict and/or balance, and the use of flexible work arrangements.

Each of these barriers will be discussed below:

3.4.1 The glass ceiling

The concept of the glass ceiling is used to explain why women are struggling or failing to move up the chain of command in the workplace. The glass ceiling is described as a transparent barrier that keeps women from rising above a certain level in organisations; it thus is an invisible barrier that limits their upward mobility (Weyer, 2007). Sheridan (2007) acknowledges that the glass ceiling is a reality for most women in most occupations, regardless of race or culture.

Weyer (2007) suggests that the following barriers contribute to the creation of the glass ceiling:

- Unfair corporate practices in recruitment, retention and promotion;
- Behavioural and cultural stereotypes and preferred leadership styles; and
- Cultural explanations rooted in feminist history.

Also, in her study on the phenomenon of the glass ceiling in South African retail banks, Mathur-Helm (2006) found that the glass ceiling gets fostered by the organisational culture, policies and strategies. According to her, only the most decentralised

organisations that are characterised by a culture that supports women's career advancement are successful in breaking down the glass ceiling, together with women's own efforts to grow and develop themselves through means such as academic development programmes (Mathur-Helm, 2006).

Still, the glass ceiling is not entirely impossible to break through and there are some women who have managed to do so. In a study done by Chovwen (2003) on female executives who have risen above the glass ceiling and have worked in such an environment for at least five years, however, the results did not seem all that positive. Women still felt that they struggled to feel accepted by their organisations, they were not well recognised for their achievements, and that they did not receive enough support or cooperation from their colleagues (Chovwen, 2003).

From the above, it is evident that many organisations still need to adapt their culture to one that empowers and develops women. An effect of the glass ceiling is that women's representation at higher levels of management remains slim, with only a few who succeed in breaking through the glass ceiling. This lack of progress reflects the complexity of issues, such as the glass ceiling, that still have to be overcome in the labour market today (Sheridan, 2007). In fact, research shows that women who break through the glass ceiling do so at a price, as these women managers are significantly less likely to be married or have children than those women who did not strive to achieve management positions (Ogden, McTavish, & McKean, 2006).

3.4.2 Self-imposed glass ceiling

The effects of the glass ceiling continue to hinder women who desire organisational advancement (O'Neil et al., 2008). As a result, women's managerial drive is lower than men's because women feel that the glass ceiling will constrain further promotions. This may lead to women ceasing their pursuit of promotions (Hamel, 2009). In conjunction with the stereotyping that successful managers are usually those that display masculine traits, this is quite a common view in the literature. However, recent studies have shown that these perceptual beliefs are held as strongly by women as by men (Ogden et al., 2006). As a result, women tend to adopt passive and self-limiting behaviours towards their own

abilities and strengths in the workplace (Ogden et al., 2006). This behaviour is known as the self-imposed glass ceiling.

The self-imposed glass ceiling implies that many women managers are viewed as having lower organisational commitment because of their perceptions, which has a negative impact on the possibility of career advancement. For example, a woman might limit her career advancement by failing to apply for a position for which she is well qualified, because of her view that women with a family might not be able to handle the demands associated with management positions as well as men (Ogden et al., 2006).

In their study of women working in a male-dominated industry, Cross and Linehan (2006) discovered that the self-imposed glass ceiling is an issue especially for women who either are already married with children or who aspire to one day raise a family. They believe that the dual burden of juggling both an aspiring career and a family might be too much to handle, or that the cost of a promotion would outweigh its benefit. Therefore, they suggest that "...we cannot attribute the absence of women in senior management solely to organisational and structural policies...", as the reason for this might be individual female choice (Cross & Linehan, 2006, p. 37).

Ogden *et al.* (2006) confirm the above in the findings of their study, which suggest that the self-imposed glass ceiling is reinforced by women who are reluctant to drive themselves to more senior positions, given the negative impact it would have on their work–family balance.

3.4.3 Exclusions from networks

Evidence suggests that, when it comes to social networking, women are less likely to participate in such opportunities than men (Eagly & Carli, 2007). The reason for this is that women are considered to be unfamiliar within the organisational culture that promotes comradeship amongst male employees (Chowwen, 2007). Chowwen (2007, p. 72) describes this as "an underlying, very subtle current of resistance" towards women.

Gender differences regarding the awareness and use of social networks in organisations are one of the reasons why women earn less, get promoted unevenly and do not have as much access to resources as their male counterparts. In addition, since women tend to be in the minority in managerial positions, they have fewer other women to choose from in their social networks (Waldstrøm & Madsen, 2007).

In their study, Cross and Linehan (2006) found that all the managers they interviewed felt that a lack of access to informal male networks led to a lack of access to contacts, political information and career advancement opportunities. Similarly, in a study on the career choices of women working in an international consulting firm, Kumra (2010) found that the people who got promoted easiest are the individuals usually considered to be exceptional networkers.

The importance of social networking in organisations suggests that, since women are less likely than men to participate in such networks, it creates a barrier that prevents them from moving upwards in the workplace. Eagly and Carli (2007) suggest that this is hardly a surprise, as some organisations' ideas of corporate social activities include hunting, fishing, or going out for drinks after work. For women, this is hardly an option, given their responsibilities at home (Cross & Linehan, 2006).

Other ways in which women experience such exclusion from networks is through the so-called *old boy networks* and the *queen bee syndrome*. An old boy network is an "all-male group of colleagues who socialise inside and outside the work environment" (Zhong, 2006, p. 108). The implication of such old boys' clubs for women might be drastic for their careers, given the belief that many organisational decisions are made through informal networks (Cross & Linehan, 2006). On the other hand, the queen bee syndrome arises where other women in the organisation who have already attained a higher status are not willing to share it or encourage their female co-workers to do the same (Hamel, 2009).

Consequently, exclusion from the men's club or the old boys' network is perceived as a big barrier that hinders women from reaching top management positions. It is suggested that a lack of access to such informal male networks results in a lack of access to contacts, opportunities and political information. In addition, it prevents women from reaching senior

management levels. As a result, women tend to experience increased feelings of exclusion, isolation and frustration in their work environments (Cross & Linehan, 2006).

3.4.4 Lack of mentors

Research suggests that having a mentor to assist women in the workplace is a key factor to enable career growth (Chowwen, 2007). However, because of the limited number of women in managerial positions in certain male-dominated organisations, such a work relationship is not always an option. Cross and Linehan (2006) suggest that an interdependency exists between networking and mentoring in an organisation. As a result from being excluded from informal networks, women find it difficult to find powerful female figures in their companies to act as mentors (Cross & Linehan, 2006).

Although research suggests that many women use male mentors if they cannot obtain a mentor relationship with someone of the same gender, Cross and Linehan (2006) found that this is not always an easy solution. The respondents in their study suggested that males are rather reluctant to mentor females because of the sexual innuendo attached to such a cross-gender relationship (Cross & Linehan, 2006). Similar, Chowwen (2007), who did a study on barriers women face in male-dominated occupations in Nigeria, found that women also are reluctant to accept men as mentors given the problems that can evolve from such relationships.

Some negative consequences of not having a mentor relationship inside the organisation might include a lack of professional support, career planning, information sharing and interpersonal relationships with colleagues, and exclusion from informal networks (Tlaiss & Kauser, 2010).

3.4.5 Management practices and policies

Organisational policies are derived from decisions made by senior management (Cross & Linehan, 2006). Research shows that there are discriminatory practices rooted in certain management policies in male-dominated environments (Chowwen, 2007). These include managerial selection, recruitment, performance evaluations, training, and development

and promotion procedures (Tlaiss & Kauser, 2010). Such practices then lead to frustration and discouragement for many women and cause them to leave their jobs (Chowwen, 2007).

In a study done by Chowwen (2007) it was found that many women were of the opinion that a male colleague will be considered for a job before a female counterpart, which enables the man to move more quickly up the corporate ladder. In their study of barriers preventing women from advancing in a male-dominated industry, Cross and Linehan's (2006) findings revealed that a lack of transparency surrounding promotion procedures in the organisation were directly responsible for the low numbers of women in senior management positions (Cross & Linehan, 2006).

Cross and Linehan (2006, p. 32) suggest that not having clearly set-out criteria for the promotion of women to management levels leads to a "considerable scope for discretion" by senior managers. This discretion can be influenced by management's personal views and attitudes towards women, and then basing promotion criteria on a preconceived idea of who should perform the role, rather than focussing on the qualifications or experiences required to perform the role (Cross & Linehan, 2006).

In her study of transformational methods that have an impact on women's careers in the UK retail industry, Broadbridge (2010) found that organisational policies and cultures continue to exist. This is due broadly to the traditional division of labour and organisational cultures, norms and values that hold deep-rooted stereotypes that promote narrow-minded modes of working (Broadbridge, 2010).

From the above it is clear that there still are many flaws in policies and procedures preventing women from advancement. Organisations need to learn how to implement a culture that fosters a women-friendly work environment.

3.4.6 Cultural sexism and gender discrimination

Cultural sexism or gender discrimination is the assumptions or stereotypes held by men or managers that women face different issues than men in the workplace. When women want

to work in industries traditionally viewed as male dominated, they may face many challenges of a cultural origin (Neal-Smith & Cockburn, 2009). For example, a male employee may frown at the idea of taking time off to attend to family or other personal issues. Such attitudes might reinforce traditional beliefs that women are not able to perform in male-dominated roles (Chowwen, 2007).

In a study done by Neal-Smith and Cockburn (2009) on cultural sexism in airline industries, they emphasised that assumptions about children, career aspirations, flying abilities and perceived gender differences were relevant amongst women pilots, but not amongst men. This cultural sexism towards the female pilots created circumstances that affected their working lives (Neal-Smith & Cockburn, 2009). Situations like this create difficulties for women in any male-dominated industry, as gender is associated with the ability to do one's job.

As a result, more pressure is put on women to join in with men's humour, to adapt to conservative dressing habits, to deal with sexualised language and to negotiate longer work hours (Neal-Smith & Cockburn, 2009). Sheridan (2007) suggests that many female colleagues take it as a given that the starting point in workplace norms are masculine norms and that cultural sexism therefore will continue. In addition, Neal-Smith and Cockburn (2009) are of opinion that, given the small number of women in male-dominated industries, progression to more equal work environments will take longer to emerge.

Salary and promotions are also areas in which gender discrimination in the workplace is quite common. In their study, Cross and Linehan (2006) found that women operating in a male-dominated high-tech industry felt that the traditional views of the more senior male managers limited their advancement opportunities in the workplace. In another study, Kwesiga and Bell (2004) suggested that in cases in which women were able to find an executive career, it most probably was in a support function role, which pays less and provides little opportunity for further advancement.

The abovementioned issues highlight the dilemma of women in male-dominated occupations with regard to gender discrimination. Chowwen (2007) proposes that this attitude may further support theories that stress the role of women as complementary to

their male counterparts, rather than competitive. As a result, a woman in such a profession may be viewed as violating the female role (Chovwen, 2007).

3.4.7 Sexual harassment

Sexual harassment is another barrier that affects women in the workforce. Harassment may be considered as sexual when employment decisions are based on an individual's reception or dismissal of sexual advances. Likewise, staring provocatively at someone, making off-colour jokes and creating an intimidating, hostile or offensive work environment are also considered to be sexual harassment (Zhong, 2006).

Watts (2009) found that when a woman enters a male-dominated workplace, sexual jokes and crude language may become even more evident. In an article by Byrne (2010), an Irish female ATCO claimed she was forced to endure endless sexual abuse. She described the world inside the control tower as "a den of male chauvinists who turn the air blue with crude jokes and expect their female colleagues to take on the girlie tasks of sending birthday cards and arranging the Christmas party" (Byrne, 2010, p. 5).

The occurrence of negative stereotypes inside the workplace may create an abundant ground for sexual harassment, especially in male-dominated industries. This can be a big hindrance to the career advancement of women in such occupations. The reason for this is that one of the responses by women in such sexualised environments might be to quit their job and therefore stall their career (Chovwen, 2007).

3.4.8 Work-family conflict

Because of the traditional role played by women in the home, it is generally accepted that women's careers are more complex in the workplace than those of males (Cross & Linehan, 2006; Zhong, 2006). This traditional view of women implies that it is a woman's responsibility to do the housework and take care of the children. Research suggests that South African women, amongst others, decline several career opportunities because of family and household responsibilities (Reddy, 2007).

In addition, the findings of Ogden et al.'s (2006) study suggest that higher level positions provide little scope for work-family balance strategies, as managers are required to work at least 15 to 20 hours more per week than their contract states.

It is said that most women allow family responsibilities to distract them and thus hinder them from progressing in their careers (Chowwen, 2007). This may be why "women in top management tend to be single or married with few or no children" (Zhong, 2006, p. 24). As a result, female managers who want to have children need to consider the impact that children will have on their careers. They are aware that delaying childbirth or not having children at all will better suit a career in management because of the situational constraints of the workplace (Reddy, 2007). For example, women who become pregnant during their career-building years will require a reasonable amount of maternity leave, and climbing back up the corporate ladder might be difficult after an amount of time spent away from the workplace (Eagly & Carli, 2007). Therefore, not all women choose to marry and have children (Reddy, 2007).

In a study done by Ezzedeen and Ritchy (2009) on work-family balance strategies, it was found that many women purposefully choose a slower route to the top to ensure that they remain employed whilst raising children, without having to sacrifice too much of their family life.

Motherhood, together with a successful career, has become a popular focus point when addressing the work-family life balance. Even though the literature suggests that household and parenthood are a shared responsibility these days, this responsibility still continues to lie mostly with women (Eagly & Carli, 2007). Also, women who already have children are presented with the challenge of keeping a balance between workplace challenges and being a mother, as it is usually the mother's responsibility to spend time with the children, transport them to their activities, or take time off work when a child is sick (Reddy, 2007).

Therefore, women working in firms that do not accommodate these needs may face devastating role conflicts arising while having to deal with young children, aging parents and developing their own careers (Cross & Linehan, 2006). Fortunately, some

organisations are starting to reward women on the basis of their potential, rather than their achievements, as they acknowledge that women may take longer to reach certain career goals due to family responsibilities (Eagly & Carli, 2007).

Research on organisational support has indicated that, when organisations support work-family balance practices, they will most likely demonstrate this through their policies, culture and career path. In contrast, when employees perceive their organisations to be less supportive of the family, they experienced more work-family conflict, less job satisfaction, less commitment towards their job, and ultimately greater turnover (Marcinkus, Whelan-Berry, & Gordon, 2007).

3.4.9 Use of flexible work arrangements

Since the introduction of the terms “glass ceiling” and work-family balance, a large number of organisations have implemented organisational policies and practices that support women. These policies and programmes are implemented to assist the advancement of women to more senior roles, and therefore assist women to dismantle the glass ceiling (Schwartz, 1996).

However, in their study on the barriers women face in a male-dominated, high-tech industry, Cross and Linehan (2006, p. 37) revealed that women felt that making use of such policies reinforced the stereotypical belief that “women don’t have time to devote to management”. They furthermore felt that management was inconsistent in applying these policies. Although they were implemented to enable women to balance their work and personal lives, they felt that management also took part in the surrounding stereotypes (Cross & Linehan, 2006).

It thus is assumed that, if women make use of flexible work arrangements, their careers would be on the line. This was confirmed in a longitudinal study done by Catalyst (in Schwartz, 1996), in which the majority of participants reported that, by making use of flexible work arrangements, they were ineligible for promotion. The results of the study by Drew and Murtagh (2005) also correspond with the abovementioned. In their study on senior management making use of work-family balance strategies, they found that both

men and women in senior management felt that their careers would be in serious jeopardy if they made use of such strategies (Drew & Murtagh, 2005).

However, the use of flexible work arrangements has not only had negative consequences. On a positive note, it has assisted many women who do not strive for top positions to maintain a balance between work and family life. Still, organisations need to evolve their policies and culture regarding flexible work arrangements to lessen fears about using such policies (Schwartz, 1996).

3.4.10 Barriers women face in South Africa

The abovementioned barriers refer to women in general working in male-dominated industries. This section focuses specifically on women working in South Africa. It attempts to explore whether women experience the same barriers in South Africa as they do globally, or whether there are differences in the barriers experienced.

When looking at the Labour Acts in South Africa, it seems as if the literature only recently started to focus on women in the workplace. The Employment Equity Act (EEA) of 1998 was implemented by the South African Government as a means to create equitable representation for minority groups such as women and previously disadvantaged individuals. However, it still remains a struggle for most women in SA to reach top levels in organisations (Mathur-Helm, 2005).

On the basis of the literature (Lewis-Enright et al., 2009; Mathur-Helm, 2005) it would appear that the same barriers women face globally are also faced in the South African context. Apart from the issues surround a socio-economic struggle, a big barrier continues to be work-family balance issues. In their study on barriers women face in South Africa, Lewis-Enright et al. (2009) found that, amongst work-family balance issues, women also felt that there were not enough network opportunities, too little emphasis on equality between the genders, and the belief that women are still the primary caretakers of the family.

Booyesen and Nkomo (2010) researched the combined effects of race and gender stereotypes on women in their quest for advancing to leadership positions. Their results showed that black and white men were less likely to attribute successful managerial skills to women. Furthermore, black men scored significantly higher than white men in their views on women being less successful managers than men. This implies that managerial stereotypes are more robust amongst black men than white men (Booyesen & Nkomo, 2010). The reason for this might be that, in most African cultures, women are still expected to fulfil domestic roles, since they are regarded mainly to be child bearers (Lewis-Enright et al., 2009).

Booyesen and Nkomo (2010) found further that the black women in their study felt that women had much better characteristics for managerial positions than men. Booyesen and Nkomo's (2010) study was only the second ever to find such results, and suggests that black women might have this unique standpoint because of the disadvantaged positions they experienced under apartheid. White women perceived men and women to be equal in their required managerial characteristics.

The reasons for the above findings might be contributed to the South African EEA, which promotes the appointment of women and previously disadvantaged individuals (Mathur-Helm, 2005). Also, the statistics given earlier in this chapter show that women in parliament have the best representative statistic of women in managerial positions. In 2011, 35% of senior managers in government were women (Businesswomen's Association of South Africa, 2011). Although the representation of women in CEO and MD positions remains low, there are definite improvements in women's representation in South Africa, especially among previously disadvantaged black women.

Mitchell et al. (2005) did a study about the perceptions of South African pilots with regard to gender-related issues on the flight deck. They found that although the growing number of female pilots was still small, there were definite improvements in the stereotypically male image of the occupation. Even though women still continued to receive resistance from older male pilots, the younger generation men were becoming more positive about women's ability to fly and operate an aircraft. According to these authors, the attitude

towards women improved as the different genders had the opportunity to work together (Mitchell et al., 2005).

Overall, it seems as if South African women continue to experience bias and stereotypes in the workplace. However, as the above findings suggest, it appears that, slowly but surely, definite improvements are starting to show in parliament and certain male-dominated industries. It seems as if these improvements are the result of the EEA, as well as the younger generation's views that are more open to women's skills and abilities.

3.4.11 Conclusion

This part of the chapter shed some light on the barriers to career advancement women face in organisations. It also improved the understanding of why there are so few women in top levels in organisations. Overall, it appears as if the same barriers are experienced by women globally, especially those in male-dominated industries.

When comparing women at the top of organisations to their male counterparts, women are still highly underrepresented. This could be because of the "high price" some women have to pay to achieve a position at higher levels in organisations, for example choosing not to get married or have children.

Although many laws and regulations have been implemented in various countries – such as South Africa's EEA – in an attempt to correct unequal representation, research suggests that women still continue to be at a disadvantage worldwide (Mathur-Helm, 2005).

Facilitators of women's career advancement will be discussed next.

3.5 FACILITATORS TO WOMEN'S CAREER ADVANCEMENT

Despite the struggle many organisations still face with regard to gender equity in the workplace, numerous organisations have embarked on a number of approaches to make the workplace more gender equitable. This part of the chapter looks at what types of

facilitators have been implemented in such work environments to enable the career advancement of women.

The following facilitators will be discussed in this section: South African workplace legislation, mentors and networks, organisational policies and cultures, work-family balance strategies, and training and development initiatives.

3.5.1 South African workplace legislation

Globally, governance practices form part of attempts to create more gender equitable practices to enable improvements in social inclusion and diversity. According to Kuhlmann and Bourgeault (2008, p. 10), “Gender inequality has moved away from being a woman’s problem towards being a societal concern.” Organisations such as the United Nations, the World Health Organization (WHO), the European Council (Kuhlmann & Bourgeault, 2008) and the South African Government have all introduced gender equity policies (Mathur-Helm, 2005). Implementing such policies is a strategic way of reducing inequality while at the same time improving the quality and efficiency of public services (Kuhlmann & Bourgeault, 2008).

In South Africa specifically, the implementation of equal opportunities since the elimination of Apartheid has definitely introduced formal equality. However, since there still are many South African organisations that are not women friendly, barriers remain to the Government’s EEA. It is said that, while affirmative action has allowed South African women entry into the workplace, there still is a lack of knowledge on how to progress them into senior roles (Mathur-Helm, 2005).

Nevertheless, it is believed that one of the most successful strategies adopted by the South African Government in seeking gender equity for the country was to increase women’s representation in parliament and in government offices. It therefore appears that having more women in parliament automatically enables policies and legislation that promote equal rights in the country, and thus in the work environment (Mathur-Helm, 2005).

However, although such policies and laws have influenced the move towards a more gender-equitable workplace, the fact remains that there still are limited, if any, laws that are in favour of developing women upwards in South African organisations.

3.5.2 Mentors and networks

Mentors are said to be one of the key contributing factors for the successful development of aspiring young females in organisations (Singh et al., 2006). Senior female managers can become mentors or role models who encourage younger women in their organisations to develop to higher levels (Ogden et al., 2006). It has been said that entering into a mentoring relationship has become a “survival strategy for women” in male-dominated professions (Chowwen, 2007, p. 75). Support from mentors can be anything from positive advice, encouragement, providing a subordinate with information and advice, training and giving direction (Chowwen, 2007; Cross & Linehan, 2006).

In general, it is believed that not only mentors, but also peer relationships, can facilitate the career advancement of women. However, the difference between peer relationships and mentors is that peer relationships are said to last longer, since they are not hierarchical relationships but two-way relationships (Cross & Linehan, 2006). The advantage to having peer relationships is the larger number of available peers than mentors. Chowwen (2007) is of the opinion that it is not always possible for women to engage in mentor relationships, given the limited number of women in high levels of organisations. As a result, such women have turned either to peer relationships, or even, if possible, to male mentors (Chowwen, 2007; Cross & Linehan, 2006).

Mentoring relationships have enabled many women to face and overcome difficult challenges in the course of their careers (Chowwen, 2007). Networks and mentors are said to be such a critical element of a successful career that research has shown that individuals who excel in building networks are generally those who gets recognised for promotions first (Cross & Linehan, 2006).

It is assumed that there is interdependency between networking and mentoring in organisations. As a result of exclusion from informal networks in organisations, women

may experience difficulty in attracting the attention of possible mentors. Although many large organisations have formal mentoring programmes, research suggests that informal relationships are a more common approach, especially for women, as they face more barriers to advancement than men. In their study, Cross and Linehan (2006) found that all the women they interviewed felt that having a mentor was a positive experience for women, since it increased career mobility and the rate of promotion (Cross & Linehan, 2006).

In their study, Ogden et al. (2006) discovered that networking was the most important factor raised by both men and women as enablers of their careers. It is believed that the ability to network is not only important for building relationships in workplace departments, but also an important business skill that demonstrates visibility to senior management, who enable career progression (Ogden et al., 2006). In a study done on mentors by Ehrich (2008) it was found that mentor relationships have a positive impact on women's salary increases and promotions, learning and growth, and also provide support in the form of the friendships that are established.

However, little information is available on how women choose mentors in organisations. In their study, Singh et al. (2006) suggest role model theory as a means by which women choose their mentors – role models. According to role model theory, people observe the behaviour of others in certain situations. As a result, they use the knowledge gained from their observations to shape and form their own behaviours in similar contexts in which they expect similar outcomes. Thus, role models are selected on the basis of the way in which, and the relevance of how, they overcome certain barriers (Singh et al., 2006).

However, when looking at companies in which steps were taken to improve network and mentoring relationships in the workplace, Ogden et al. (2006) suggested that appointing external mentors for female staff, providing women with training events and developing a women's network are all methods that can help increase female career enhancement in organisations.

3.5.3 Organisational policies and culture

It is believed that the way companies implement policies and practices in favour of gender equality depend on their underlying gender thoughts. Companies may use a range of approaches to promote a gender-equitable workplace. In her study, Straub (2007) drew on the existing literature on how companies advance gender equality and eliminate the glass ceiling in organisations. She then suggested that this can be done by eliminating and celebrating gender differences (Straub, 2007).

Another facilitator to women's career advancement in organisations is the provision of equal opportunity and family-friendly HR policies (Ogden et al., 2006). Key traits of organisations that implement these policies are that they usually are aware of bias against women and therefore tend to eliminate such barriers. They tend to eliminate barriers through the use of affirmative action measures, sexual harassment guidelines as well as fair gender selection and promotion procedures (Straub, 2007).

Research shows that after organisations have implemented factors such as these organisational policies, female representation is positively associated with the percentage of senior management positions held by females (Ogden et al., 2006; Straub, 2007). In addition, Ogden et al. (2006) suggests that, as managerial gender ratios become more balanced, female managers may find more opportunities to form and join informal networks in their organisations.

However, although policies supportive of women's career advancement are an effective way of enhancing women's careers, such policies alone do not necessarily change discriminatory practices. Thus, it is suggested that organisations need to move beyond policies and procedures to embedding gender fairness in their cultures (Straub, 2007).

In their study on organisational structures, Enache, Sallan, Simo and Fernandez (2011) found that a values-driven approach by top management had a positive impact on women's career advancement. Their findings suggest that individuals experience internal success when their values corresponds with organisational values, and therefore women

seek work opportunities in organisations whose aim, philosophy and culture are similar to their own (Enache et al., 2011).

However, in certain male-dominated industries, women cannot freely choose an organisation with a culture that fits their values, as such organisations are limited. In the study done by Neal-Smith and Cockburn (2009) on cultural sexism in airline industries, the results showed that women have generally found it easier to adapt to the male culture, rather than going to extreme measures to change it and risk being typecast. As a result, the number of female pilots is on the increase (Neal-Smith & Cockburn, 2009).

Still, the development of a female friendly organisational culture that supports and values the integration of all women's lives is a necessity for all organisations that want to be taken seriously about supporting women's career advancement. Approaches for companies committed to making the advancement and retention of women part of their inherent culture include: redesigning work and reward systems, making top management responsible for employing women, and assisting women with families by means of family friendly policies (Straub, 2007).

3.5.4 Work-family balance strategies

Work-life balance has become a major issue for many organisations and for working women. Although the use of flexible work arrangements can also be regarded as a barrier to women's career advancement (see previous section of the chapter), it has helped many women to manage both their career and family life. In fact, Singh et al. (2006) even suggest that those women who have succeeded in managing their work-life balance have become big role models for younger women who plan to do the same.

It is said that, in many instances, work-family balance strategies are used by women as an excuse not to commit themselves in the workplace (Ogden et al., 2006; Schwartz, 1996). As a result, it is up to organisations to implement work-family policies in such a manner that women who do make use of such arrangements are not discriminated against (O'Neil et al., 2008).

The purpose of activities that promote work-life balance is to remove gender-based structural barriers to women's career advancement. Forms of work-family practices that organisations offer include: flexitime, job-sharing, childcare services, shorter working hours, tele-working and special maternity leave. By introducing work-family practices, it is implied that organisations acknowledge and support the multiple of demands of balancing a family and a career. These practices are expected to advance women's careers, diminish the glass ceiling and assist women to move upwards in the organisational hierarchy (Schwartz, 1996; Straub, 2007).

Although much of the literature views the balancing of work and family as a recurring issue, Ezzedeen and Ritchy (2009) suggest that it also can be viewed as an advantage for women. In their study, they explain that having a role other than being a mother or wife has made many women feel independent and whole, thus allowing them to lead healthier lives. Many women view the support of their family as an encouraging factor in their pursuit of a professional career. Ezzedeen and Ritchy (2009) found that working mothers felt that their children's pride in and encouragement of their career helped alleviate the guilt of not always being able to spend time with them.

3.5.5 Training and development

In order to overcome barriers in organisations, human resource (HR) departments need to offer development programmes to train and improve the skills of their female employees (Straub, 2007). One way to achieve this is to include gender-related issues in the socialisation or induction aspects of organisational entry (Chowwen, 2007). It is believed that gender-sensitive behaviour is crucial at this stage, because newcomers are then introduced to the customary practices of the organisation. This will most likely enable mutual respect and trust between male and female employees and therefore might also promote positive working relationships between different genders later in their working careers (Chowwen, 2007).

Using training and development as enablers of women's advancement has proved to be a commonly accepted means of furthering women's careers. These are said to be effective

means for advancement, as employers are generally open to and supportive of their employees acquiring new skills or furthering their education (Ogden et al., 2006).

In her study exploring the impact of a women-only development programme designed for women identified as high potential leaders, Clarke (2011) found that such programmes provide women with a safe and supportive environment. As a result, their self-confidence increases, they acquire new learning skills and learn from the experiences of successful role models.

However, research also suggests that the biggest concern for female participants in organisations with regard to training and development opportunities is the lack of their managers' encouragement to take such training courses. Although many women said they know they are entitled to training in their organisations, women are more reluctant to request such training. This might be because of a lack of confidence in themselves (Ogden et al., 2006).

Another concern is Wallace's (2000) findings on the impact training had on women workers. She found that the lack of accreditation and transferability of short courses contrasted with those of many male managers on the same level. It is obvious to suggest that the correct training and development initiatives be implemented to give women an equal chance as men to benefit from such training.

Therefore, supportive policies and managers pushing for the correct training initiatives are important functions to making these happen. It is said that the most helpful career facilitators with regard to training initiatives are programmes aimed specifically at recruiting school and university leavers so that they can be developed in the organisations. However, since not many organisations, especially smaller ones, have such programmes, this method is not freely available (Ogden et al., 2006).

3.5.6 Facilitators in South Africa specifically

On reviewing the literature, it became clear that there is little literature on the facilitators of women's career advancement specifically in South Africa. This might be because of the

emphasis placed on the career advancement of minority groups and previously disadvantaged individuals. This implies that there is a need to investigate the impact of facilitators of women's career advancement in SA.

Although little information is available on the facilitators, career statistics are easier to obtain. In their study, Kingdona and Knight (2007) pointed out that, although unemployment increased from 29 to 42% from 1995 to 2003, the employment rate for women rose from 38 to 48%. When considering the striking fact that the unemployment rate for men increased from 23 to 36% (Kingdona & Knight, 2007), it is safe to say that more women not only entered the workplace internationally, but also locally.

Kingdona and Knight (2007) suggest that, to a certain extent at least, this increase in female labour is a response to new opportunities and government legislation. They also suggest that higher education has increased significantly the number of women and previously disadvantaged individuals entering the workforce. Other suggestions for the increase in women's representation were: public works programmes, active labour policies and further education and training (Kingdona & Knight, 2007).

Thus, for the purpose of this study, it is assumed that facilitators such as government laws, amongst the other things mentioned in this study, had a definite influence on encouraging career advancement amongst women in SA. Unfortunately, these statistics are general statistics and do not necessarily suggest that they are also applicable to male-dominated environments in SA.

3.5.7 Conclusion

When considering the abovementioned facilitators of women's career advancement, one emerging factor that resurfaces in each of them is the fact that top management must be supportive of such facilitators for them to work. In addition, given the employment statistics specifically applicable to SA, it is suggested that – even though the facilitators still need much development to prevent unemployment – women have definitely shown evidence of advancing their careers through facilitators.

3.6 CHAPTER SUMMARY

Although the ranks of women in top levels in organisations have increased, there remain many industries that are still predominantly male orientated. The aim of Chapter 3 was to provide information on the theories that guide women's career advancement in organisations. Barriers that women face in their organisations that restrain them from advancing in their careers were also discussed, together with facilitators in the workplace. The research suggests that, even though almost half of the workforce consists of women, the number of women in mid-management as well as senior management is still limited (Reddy, 2007; Weyer, 2007; Zhong, 2006).

There is little guidance for women on how to overcome these barriers in the workplace, as many theories focus only on men's careers. Much of the literature discussed in this chapter suggests that the female career path cannot be compared to the original male career path.

Chapter 4 deals with the empirical part of this study.

4 CHAPTER 4: THE RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter explains the research methodology used in this study. The measuring instruments used for the data collection are discussed, and a description of the sample used is provided. The research is mainly exploratory in nature and the research questions were tested by means of descriptive and inferential statistics.

The main objective of this chapter was to determine what statistical methods had to be applied to analyse the barriers and facilitators in the ATC industry, as perceived by the male and female ATCOs currently employed in the industry. A survey design was used to achieve the research objectives. According to Saunders et al. (2009), the advantage of using the survey method is that it allows the collection of data from a sizeable population in a highly economic way. Also, it is perceived to provide data that is relatively easy to understand and to explain to others. The main disadvantage of this design is that the results can only be generalised to the sample population at the time the survey was conducted (Saunders et al., 2009).

4.2 RESEARCH PARADIGM AND MOTIVATION FOR USING A SURVEY DESIGN

The research paradigm is the general worldview a researcher holds about the world, as well as the nature of the worldview. Worldviews can be shaped by the subject discipline of the researcher, the beliefs held in the researcher's area, or past research experiences (Creswell, 2009). These areas help underpin the research strategy, as well as the methods chosen to form part of that strategy (Saunders et al., 2009).

The research philosophy of this study was the positivist worldview. Positivist researchers claim that only objective, observable facts can be the basis of reality and that they usually can be observed by an inquirer who has little impact on the phenomenon itself (Maree, 2010). The facts therefore can be studied objectively by the researcher from the outside. Positivists believe that knowledge can be revealed through the scientific method and that

this enables the researcher to provide possible explanations of the causes of things happening in the world (Maree, 2010). The survey method was thus the appropriate method to use for this study, as the participants were observed from an objective area outside of the researcher's daily functioning. In addition, the researcher had little, if any, contact with the participants. As a result, the researcher attempted to provide possible explanations for the research problem.

The strategy of inquiry was the survey strategy, and it was used to generalise from a sample to a population so that inferences could be made about certain characteristics, attitudes and behaviours of the population (Creswell, 2009). Survey design is usually associated with the deductive approach. It is a common strategy in business and management research, and is used to answer who, what, where and how questions (Saunders *et al.*, 2009). Some benefits to using survey research as the preferred type of data collection procedure for this quantitative study were:

- Many respondents could complete the questionnaire in a relatively short period of time (Creswell, 2009)
- It was relatively cheap and easy to do (Maree, 2010)
- The respondents could be reached across long distances (Maree, 2010)
- It provided a quantitative (numeric) description of the attitudes or opinions of the population (Creswell, 2009).

The study had the following characteristics:

- **Empirical:** The re-analysis of existing secondary data suggests that the research was empirical in nature. Secondary data includes data gathered from books and journals (Saunders *et al.*, 2009).
- **Applied research:** Applied research is research of direct relevance to practitioners that addresses issues they see as important and that are presented in ways they can understand and act upon (Saunders *et al.*, 2009). This study aimed to address the barriers and facilitators in the workplace, and the results therefore can be applied and used as a guideline in the organisations.

- **Cross-sectional:** The data was collected at one point in time (Creswell, 2009), indicating that the study was cross-sectional.
- **Non-experimental research:** Experimental research seeks to determine if a specific treatment influences an outcome (Creswell, 2009). This study involved non-experimental research, since no outcomes were tested.
- **Secondary data:** Existing literature on barriers to and facilitators of women's career advancement, which is classified as secondary data, was used to do the literature review.
- **Quantitative:** The data gathered through the survey was quantitative data. Quantitative research makes use of numerical data that produces statistics, numbers or figures (Saunders et al., 2009).

4.3 RESEARCH DESIGN

The questionnaire used by Zhong (2006), *Factors Affecting Women's Career Advancement*, was used as the measuring instrument in this study. The research methods used in this questionnaire are both quantitative and qualitative. ATCOs working in the ATC industry in SA completed the survey online. The researcher then determined the reliability and validity of the survey to determine whether it could be used the South African context.

A comparison was made between the perceptions of male and female ATCOs. In addition, gender and biographical comparisons were made within the groups. The dependent variables were the factors identified by the ATCOs as barriers or facilitators. Gender (males and females) and biographical variables (age, race, number of children, years' experience and marital status) were the independent variables. The qualitative measures were in the form of the two open-ended questions at the end of the questionnaire, which were used to gather additional information about what the industry can do to encourage women's career advancement.

4.4 POPULATION AND SAMPLE

According to Saunders et al. (2009), population can be defined as the full set of cases or people that can be used to explore certain characteristics. A sample is a part or subgroup of the larger population that is used to collect data from the larger population. Saunders et al. (2009) have identified a number of advantages to making use of sampling rather than gathering data from an entire population:

- It is impractical to survey an entire population
- Budget constraints prevent researchers from surveying an entire population
- Time constraints prevent researchers from surveying an entire population
- The results are available faster

The target population was male and female ATCOs working in ATC centres in SA. The reason for sampling both men and women was so that the results for the two genders could be compared to see if men's and women's perceptions of barriers to and facilitators of women's career advancement differ.

The proposed study made use of a non-probability sampling technique. When making a decision on the sample size, Saunders et al. (2009) advise that, unlike probability sampling, there are not many rules that guide this form of sampling. Instead, the logical relationship between one's sample selection technique and purpose of the research is important, since generalisations are being made to theory rather than about a population. Therefore, Saunders et al. (2009) suggest additional sources in the data collection method, such as methods to obtain qualitative data to verify the results obtained from the sample. In the case of this study, the two open-ended questions at the end of the questionnaire served this purpose.

Convenience sampling was the method used to sample the ATC population. Convenience sampling involves selecting those cases that are easiest to obtain. The sample selection process is continued until the researcher has obtained the adequate sample size (Leedy & Ormrod, 2010). Saunders et al. (2009) warn, however, that this sampling method is open

to bias, due to the ease of obtaining such responses. For example, convenience sampling is less structured than some other sampling methods used to obtain data that effectively represents a population. Some might therefore view it as a less reliable method to sampling. However, Saunders et al. (2009) suggests that such bias is less important when there is little variation in the sample, as in this study, in which all cases sampled worked as ATCOs at the time.

A sample size of 147 was obtained from a population of 323 ATCOs. The sample size of 147 represented 46% of the total ATCO population.

Sampling was accomplished by e-mailing the link to an identified contact person inside ATNS. The contact person then distributed the link a first, second and third time to ensure that a big enough sample size was achieved.

4.5 THE MEASURING INSTRUMENT

The questionnaire, *Factors Affecting Women's Career Advancement* (see Annexure A) what was used in this study is based on the questionnaire used by Yan Zhong in her PhD dissertation (2006), *Factors affecting women's career advancement in the hospitality industry: perceptions of students, educators, and industry recruiters in the hospitality environment*. Permission was obtained to make use of the questionnaire (see Annexure C).

The questionnaire used in this study contains 43 closed-ended questions, and two open-ended questions that were placed at the end of the survey. The questionnaire was divided into five sections.

- Section 1: Biographical information
- Section 2: Factors that facilitate women's career advancement
- Section 3: Factors that constrain women's career advancement
- Section 4: Gender issues in the workplace
- Section 5: Open-ended questions

Each section will now be discussed

4.5.1 Biographical information section

The first section consisted of the respondent indicating that he or she gives their consent to take part in the study. It also included a biographical section that gave the respondent an opportunity to provide some basic biographical data about him or her. Biographical information asked included age, gender, number of years' experience, educational qualification, marital status, number of children and race.

4.5.2 Factors that facilitate women's career advancement (15 items)

In the second section, the respondents were requested to indicate their understanding and perception of factors that facilitate women's career advancement in the workplace, using a five-point Likert scale, ranging as follows:

- Extremely unimportant (1)
- Unimportant (2)
- Neither important nor unimportant (3)
- Important (4)
- Extremely important (5).

4.5.3 Factors that constrain women's career advancement (15 items)

In this section, the respondents were asked to indicate their opinion on factors that constrain women's career advancement in the workplace, also on a five-point Likert scale ranging as follows:

- Not a barrier (1)
- Less of a barrier (2)
- Neither (3)

- A barrier (4)
- Major barrier (5).

4.5.4 Gender issues in the workplace (13 items)

The fourth section consisted of different types of questions that had to be answered. Some of the questions were on a five-point Likert scale, ranging from:

- Very uncomfortable (1)
- Uncomfortable (2)
- Neither (3)
- Comfortable (4), to
- Very comfortable (5)

Others ranged from:

- Strongly disagree (1)
- Disagree (2)
- Neither (3)
- Agree (4), to
- Strongly agree (5)

There also were two questions on a yes/no scale.

4.5.5 Open-ended questions

In the final phase of the questionnaire, two open-ended questions were asked. These questions encouraged the ATCOs to offer comments and suggestions on ways to improve

women's career advancement in the ATC environment. The method used here is called triangulation.

Triangulation refers to the use of different data collection methods within one study in order to “ensure that the data are telling what you think they are telling you” (Saunders et al., 2009, p. 146). Triangulation is critical in facilitating interpretive validity and could require researchers to check the extent to which quantitative sources are supported by a qualitative perspective (Maree, 2010). The current study used both quantitative and qualitative data collecting methods, which increased the reliability of the results that were obtained. Maree (2010) suggests that the benefit to such questions add value to the collected data by verifying that the questions were answered honestly. They furthermore also reduce systematic bias by providing more comprehensive information and confirming what was answered in the questionnaire, making the answers more reliable (Maree, 2010).

4.5.6 Administration of the instrument

The questionnaire was an Internet-mediated questionnaire. Such questionnaires are administered electronically using the Internet (Saunders et al., 2009). An invitation to participate in the research, together with an internet link to the questionnaire, was e-mailed by the organisation's HR department to the ATCOs in the company. The respondents could then access the questionnaire through the link provided. The link took them to a web page that presented the computer-generated questionnaire electronically and gave the respondents the opportunity to complete it online. Clear instructions for its completion were also provided online, and the respondents could not submit the survey without finishing all the required questions. This prevented the researcher from obtaining any unfinished and therefore unusable questionnaires.

The purpose of providing an online link to the questionnaire was to promote a higher response rate due to the geographical constraint of the respondents working in different ATC centres in SA. In addition, the costs associated with sending the questionnaire via the postal services would have been much higher than sending a link via e-mail. Lastly, a shorter response time was also achieved through online distribution.

4.6 DATA ANALYSIS

Since all questionnaires were answered online, the data was stored electronically in the questionnaire's online database. The Statistical Analysis Software (SAS) program and the BMDP statistical packages were used to analyse the data. Saunders et al. (2009) describe data analysis as the ability to break down information and explain the nature of the component parts as well as the relationships between them. Maree (2010) further emphasises the necessity to explain the statistical procedures in simple terms by making use of the following:

- Frequencies, means and standard deviations (descriptive statistics)
- Cronbach's alpha values to determine the reliabilities
- Inferential statistics
- Two-sided t-tests and ANOVA p-values calculated to determine the differences between groups

In addition, it is necessary to make known the statistical significance level (for example, the one percent ($p \leq 0.01$) or five percent ($p \leq 0.05$) levels) and to calculate the meaning of the effect sizes (r). It also is necessary to explain why the instrument used is valid and reliable in the South African context, and therefore the data needs to be standardised by using a South African sample. The specific techniques that were used in this research study are discussed below.

4.6.1 Descriptive statistics

Descriptive statistics are used to describe a basic feature of a study in a numerical manner (Saunders et al., 2009). They are used by the researcher to describe data in a way that makes it better understandable. Maree (2010) adds that, when values of quantitative variables are ranked from the lowest to the highest, they form a distribution across a range of certain values. This provides the descriptive statistics that summarise the results in three ways:

- The central tendency (means, mode and median)
- Dispersion around the average (range, variance and the standard deviation)
- Shape (skewness and kurtosis)

The descriptive statistics in this study will be demonstrated by providing the biographical information in frequency graphs and tables.

4.6.2 Standardising the questionnaire

A benefit of using Zhong's measuring instrument is that it ensures reliability and validity due to its prior use. It is believed that a pre-existing questionnaire already has an established validity and reliability (Saunders et al., 2009). However, since Zhong used her questionnaire in the United States, it is necessary to standardise the questionnaire to the South African context. For a measuring instrument to be standardised, it must be valid and reliable (Maree, 2010).

4.6.2.1 *Validity*

Validity of an instrument can be defined as "the extent to which that instrument measures what it is supposed to measure" (Maree, 2010, p. 216). The different validities are (Maree, 2010):

- Face validity
- Content validity
- Construct validity
- Criterion validity

The type of validity used for standardising a measuring instrument is construct validity. Construct validity indicates how well the constructs covered by the instrument are measured by the different groups of related items. In order to prove standardisation of an

instrument, two statistical techniques, called factor analysis and item analysis, had to be performed (Maree, 2010). Each one will be discussed below.

Item analysis

Item analysis is used to identify any items that might not be suitable for use in the measuring instrument. These item statistics are calculated to enable the researcher to identify items that might be a bad fit with the rest of the items in the instrument and, as a result, to remove those items from the instrument (Maree, 2010).

The method that was used to determine item analysis in this study is called the discrimination index. This index shows the researcher how well an item discriminates between items that are considered to be a good fit with the other items in the instrument, as well as items that are considered a bad fit with other items. Guidelines suggest that the discrimination index should be higher than 0.3 to be considered a good fit. Therefore researchers usually prefer a cut-off value of 0.3 (Maree, 2010).

Factor analysis

Factor analysis is used “to examine the correlations among a number of variables and identify clusters of highly interrelated variables that reflect underlying themes, or factors, within the data” (Leedy & Ormrod, 2010, p. 282). Thus, factor analysis is used to determine which items fall together to form and measure the same factor.

Maree (2010) suggests that items measured on a five-point Likert scale (like the survey used in this study) are well suited for this analysis. The factor loadings that plot underneath each axis show the researcher which variables “clump together” (Pallant, 2007, p. 183) to form a factor. A factor loading of 0.3 is usually used to determine which factors cluster together.

4.6.2.2 *Reliability*

The reliability of an instrument suggests the extent to which a measuring instrument is repeatable and consistent (Maree, 2010). Saunders et al. (2009) describe it as the extent to which the data collection technique would have showed similar observations should the study be done by other researchers for the same purpose. There are a number of different reliabilities, namely (Maree, 2010):

- Test-retest reliability
- Equivalent form reliability
- Split-half reliability and
- Internal reliability

Internal reliability, also known as internal consistency, is used for the standardisation of an instrument. Basically it means that, when a number of items are used to measure a certain construct, there should be a high degree of similarity amongst them. This degree of similarity indicates the internal consistency of the instrument (Maree, 2010).

Cronbach's alpha is used to measure the internal consistency of an instrument and is based on the inter-item correlations. When the items correlate strongly with each other, the alpha coefficient will be close to one. This suggests that the internal consistency is high. If, however, the items correlate poorly with each other, the alpha coefficient will be close to zero (Maree, 2010). The following guideline for the interpretation of Cronbach's alpha is generally regarded as acceptable (Maree, 2010):

- 0,90 – high reliability
- 0,80 – moderate reliability
- 0.70 – low reliability

Generally, values lower than 0,60 are regarded as unacceptable (Maree, 2010).

4.6.3 Analysis of variance (ANOVA)

ANOVA was used to answer research questions one and two. An ANOVA is used to “compare the mean scores of more than two groups” (Pallant, 2007). An F score is calculated to represent the variance between the different groups divided by the variance between the different groups. A large F ratio suggests there is more variability between the groups than there is within each group (Pallant, 2007).

A significant F score suggests that the null hypothesis can be rejected because the population means are equal. However, it still does not indicate to the researcher which of the groups differs. To determine which groups differ, it is necessary to do a post-hoc test. The post-hoc test that was used in this study is called Duncan’s multiple range test.

4.6.4 Content analysis

Content analysis was used to analyse the two open-ended questions. Content analysis is a detailed examination of the contents of a particular body of material for the purpose of identifying patterns, themes or biases (Leedy & Ormrod, 2010). It is furthermore used as an inductive process to help analyse and understand raw data to look for similarities and differences in text in order to confirm or discard certain findings (Maree, 2010).

In this study, the qualitative responses to the open-ended questions in the survey helped to determine how consistently the candidates answered their quantitative questions, which were measured on the Likert scale.

4.7 FORMULATION OF THE RESEARCH QUESTION

A research question specifies what attracts the researcher to the study and what the focus of the study will be. According to Maree (2010), a research question is needed for the following reasons:

1. It directs the researcher to the appropriate literary resources, such as what literature to read and how to narrow down the bibliographical search.

2. It provides the researcher with a focus for the data collection and prevents him/her from straying from the original purpose of the study (Maree, 2010).

The following research questions were formulated to achieve the objective of the study:

Research question 1:

Are there any significant gender differences in men's and women's perceptions of factors that facilitate and constrain women's career advancement and gender issues in the workplace?

Research question 2:

Are there any significant differences in the biographical variables of factors that facilitate and constrain women's career advancement and gender issues in the ATC industry?

ANOVAs will be used to answer research questions 1 and 2. Dependent variables will be the factors that facilitate and constrain women's career advancement. The independent variables will be gender, age, years' experience, marital status, number of children and race.

Research question 3:

What can the ATC industry do to better prepare women for future leadership positions in the ATC environment?

Research question 4:

What can the ATC industry do to help reduce barriers to women's career advancement that might exist in the ATC industry?

Content analysis was used to analyse research questions 3 and 4.

4.8 ASSESSING AND DEMONSTRATING THE QUALITY AND RIGOUR OF THE PROPOSED RESEARCH DESIGN

4.8.1 Possible bias or error

Within survey research there is always a possibility of bias or error that might influence the results of the research study. A potential bias within this specific study might have been response bias. Response bias is the attempt of a respondent to answer the questionnaire in a way that is deemed socially acceptable (Saunders et al., 2009). This issue was overcome by ensuring the respondents that the questionnaire remained anonymous and therefore he/she need not be afraid to answer the questions truthfully.

4.9 RESEARCH ETHICS

Leedy and Ormrod (2010) indicate that, when human beings are the focus of an investigation, the researcher must take a close look at the ethical implications of the study with regard to the people being investigated. The respondents in a study need assurance that participation in the study is voluntary and that they are not being coerced into answering questions. Furthermore, the participants also need to be protected from harm and their right to privacy needs to be respected (Leedy & Ormrod, 2010).

In order to ensure that this study complied with all the ethical requirements, any person who wished to participate in the study was required to provide informed consent. Before they had access to the online questionnaire, the internet-based questionnaire provided them with a web page that required them to give their consent before they could complete the questionnaire. By ticking the box “I give my consent”, the participants indicated that they had read and understood the information provided on the study and chose to continue. In addition, they also indicated that they participated in the study on a voluntary basis and were in no way whatsoever coerced into completing the questionnaire. An example of an informed consent form is attached in Annexure B.

4.10 CHAPTER SUMMARY

This chapter explained the methods used in this study to provide a broad understanding of the methods and processes used in this research project. The determination of the sample, the measuring instrument, research questions, data collection and data analysis procedures were discussed.

The next chapter deals with the reported results, their interpretation and integration.

5 CHAPTER 5: DATA ANALYSIS

5.1 INTRODUCTION

In this chapter, the results obtained in the research study are discussed and visually represented according to the main data analysis methods discussed in Chapter 4. This includes the results from the factor analysis, the internal consistency measures obtained from the Cronbach's alpha coefficient, and the ANOVA and content analysis results. The purpose of this study was to examine the perceptions of male and female ATCOs of significant factors that facilitate or constrain women's career advancement in the ATC industry. The data used in this study was obtained from a questionnaire that was administered online. The questionnaire contained both quantitative and qualitative data. The qualitative data was obtained through two open-ended questions to obtain suggestions on what the ATC industry could do to better prepare women who work in the industry to advance in their careers, as well as to help reduce industry barriers to women's career advancement.

5.2 BIOGRAPHICAL INFORMATION

The first part of the questionnaire requested the respondents to complete biographical information, which provided the researcher with personal data about the sample. Saunders *et al.* (2009) suggests that the purpose of the biographical section is to enhance the opportunity to make the sample as representative as possible to the whole population.

There are 323 qualified air traffic controllers in South Africa, and 29% of them are women (ATNS, 2011). For this study there were a total of 147 responses from the population, which implies that a total of 46% of the population responded to the questionnaire. Sixty-six of the 94 women (70%) and 81 of the 229 men (35%) responded to the questionnaire. This part of the chapter shows the profile of the biographical sample by gender, age, race, educational qualification, years' experience, marital status and number of children. These categories of biographical variables were included to explore the variables of concern for this study. They are represented below by means of descriptive statistics.

5.2.1 Gender distribution

Table 5.1 indicates the gender distribution of the respondents in the study. According to the figure, the sample comprised 44.90% women (N = 66) and 55.10% men (N = 81).

Table 5.1: Gender distribution

Gender		
Gender	Frequency	Percent
Female	66	44.9
Males	81	55.1

5.2.2 Race distribution

According to Table 5.2, the sample consisted of 58.5% white subjects (N = 86), 27.21% African subjects (N = 40), 8.16% Indian subjects (N = 12) and 6.12% coloured subjects (N = 9) subjects.

Table 5.2: Race profile of the sample

Race profile		
Race	Frequency	Percent
White	86	58.5
African	40	27.21
Indian	12	8.16
Coloured	9	6.12

5.2.3 Age distribution

Table 5.3 shows the age profile of the study participants. The sample comprised 8.16% subjects aged 24 years and younger (N = 12), 23.13% between the ages of 25 and 34 (N = 34), 33.33% between the ages of 35 and 44 (N = 49), and 35.37% aged 45 years and older (N = 52).

Table 5.3: Age profile of the sample

Age		
Age	Frequency	Percent
24 years and younger	12	8.16
25-34 years	34	23.13
35-44 years	49	33.33
45 and older	52	35.37

5.2.4 Marital status

According to Table 5.4, 25.85% percent of the sample was single (N = 38), 69.39% were married (N = 102), 3.4% were divorced (N = 5) and 1.36% were single parents (N = 2). From the results, it is clear that the married group is dominant.

Table 5.4: Marital status

Marital status		
Marital	Frequency	Percent
Single	38	25.85
Married	102	69.39
Divorced	5	3.4
Single parent	2	1.36

5.2.5 Years' experience

From Table 5.5 it is evident that 36.73% of the subjects had less than 10 years' experience (N = 54), and 63.27% had more than 10 years' experience (N = 93).

Table 5.5: Years' experience

Years' experience		
Years	Frequency	Percent
less than 10	54	36.73
more than 10	93	63.27

5.2.6 Number of children

Table 5.6 indicates the age profile of the study. The sample comprised 28.57% subjects with no children (N = 42), 25.17% subjects with one child (N = 37), 29.93% subjects with two children (N = 44), 14.29% subjects with three children (N = 21), and 2.04% subjects with four or more children (N = 3).

Table 5.6: Number of children

No of children		
Children	Frequency	Percent
0	42	28.57
1	37	25.17
2	44	29.93
3	21	14.29
4 or more	3	2.04

5.2.7 Level of education

According to Table 5.7, the sample consisted of 23.13% subjects with a qualification between Grade 9 and 12 (N = 34), 29.25% with a diploma (N = 43), 12.93% with a higher diploma (N = 19), 14.97% with a graduate degree (N = 22), and 19.72% with another qualification (N = 29).

Table 5.7: Level of education

Level of education		
Education	Frequency	Percent
Grade 9–12	34	23.13
Diploma	43	29.25
Higher diploma	19	12.93
Graduate degree	22	14.97
Other	29	19.72

Table 5.8 provides a summary of the sample's characteristics.

Table 5.8: Sample characteristics (N = 147)

Characteristic	Number	Percent
Gender		
Female	66	44.9
Male	81	55.1
Race		
White	86	58.5
African	40	27.21
Indian	12	8.16
Coloured	9	6.12
Age distribution		
24 years and younger	12	8.16
25-34 years	34	23.13
35-44 years	49	33.33
45 and older	52	35.37
Marital status		
Single	38	25.85
Married	102	69.39
Divorced	5	3.4
Single parent	2	1.36
Years' experience		
Less than 10	54	36.73
More than 10	93	63.27
Number of children		
0	42	28.57
1	37	25.17
2	44	29.93
3	21	14.29
4 or more	3	2.04
Level of education		
Grade 9 – 12	34	23.13
Diploma	43	29.25
Higher diploma	19	12.93
Graduate degree	22	14.97
Other	29	19.72

5.3 EXPLORATORY FACTOR ANALYSIS

An exploratory factor analysis (EFA) was performed using the SAS and BMDP statistical packages to determine the goodness of fit of the survey used for this study.

5.3.1 Facilitators

Factor analysis was conducted on the 15 items that facilitate women's career advancement. Kaiser's criterion, also known as the eigenvalue rule, was used. Principal axis factoring was conducted, and factor analysis was performed through the varimax (orthogonal) rotation. The initial factor analysis revealed the presence of five factors with eigenvalues exceeding 1. However, an inspection of the scree plot revealed a clear break after the second factor. It was then decided to retain two factors for further investigation, which will hereon be referred to as Factor 1 and Factor 2.

The two-factor solution explained a total of 30% of the variance, with Factor 1 contributing 21% of the variance and Factor 2 contributing 9% of the variance. Inspection of the correlation matrix revealed the presence of seven items on Factor 1 and six items on Factor 2. All but two variable loadings were 0.3 and above. The two items labelled educational qualifications and career goals had double loadings on both factors, which suggests that the items does not fit well with the other items in its factor. A possible reason why educational qualification does not fit well might be that all ATCOs need to complete the same rating through ATNS in order to become an ATCO (ATNS, 2011). A reason for career goals not fitting well might be because all ATCs work in a specialised field and have more or less the same career goals.

Pallant (2010) suggest that, if one is interested in improving the scale, it is necessary to remove the items that do not fit well with the others. Therefore, the two items, educational qualifications and career goals, were removed and the factor rotation was repeated. The repeated results are shown in Table 5.9.

Table 5.9: Factor loading for facilitators affecting women’s career advancement (N = 147)

	Factor Loadings	
	Personal/External	Attitude/Internal
Personal / External support		
Network	0.757	
Personal sacrifice	0.533	
Mobility	0.532	
Opportunities	0.428	
Personality	0.411	
Family support	0.335	
Luck	0.298	
Attitude/ Internal character		
Effective communication skills		0.832
Attitude towards work		0.780
Job knowledge		0.626
Problem-solving skills		0.464
Hard work		0.392
Support and guidance from a mentor		0.286

After repeating the factor rotation, the two factors accounted for a total of 31% of the variance, with Factor 1 (External) contributing 20% and Factor 2 (Character) contributing 11%. After repeating the factor rotation, Factor 1 included seven variables that measured personal effort and external support. Factor 1 was thus labelled *personal effort and external support* (External). The target factor loadings ranged from 0.29 to 0.76, and the Cronbach’s alpha coefficient was 0.68, which is a fairly acceptable internal consistency score.

Factor 2 included six variables that measured character, attitude and internal support. This factor was named *Internal Character* and referred to personal attitude. Target factor loadings for Factor 2 ranged from 0.29 to 0.83, and the Cronbach’s alpha coefficient was 0.72, which suggest the factor has good internal consistency.

5.3.2 Constraints

The same factor analysis procedures were performed on the 15 constraint items. Three factors were extracted and all items had loadings higher than 0.30. However, one item, inadequate job knowledge loaded double on two factors and was removed, as the double loading suggests that the item does not fit well with the other items. A reason for this might be because inadequate job knowledge will result in ATCOs not receiving placement within ATNS, as inadequate job knowledge suggests they will not be able to perform their job. It is thus assumed that all ATCO have adequate job knowledge when it comes to air traffic management. The item inadequate job knowledge was therefore removed. The results are shown in Table 5.10.

Table 5.10: Factor loading for constraints affecting women’s career advancement (N = 147)

	Factor Loadings		
	Equity	Family issues	Lack
Equity			
Equity in promotion	0.93		
Equity in pay	0.90		
Equity in training	0.86		
Old boy network	0.59		
Sexual harassment	0.49		
Credibility	0.33		
Family issues			
Being a single parent		0.93	
Childcare responsibilities		0.89	
Job characteristics		0.64	
Conflicts with family responsibilities		0.62	
Being married		0.50	
Lack of support at work		0.42	
Lack of support			
Lack of role models			0.82
Lack of mentor			0.80

The three factors accounted for a total of 57% of the total variance, with Factor 1 (Equity) contributing 30%, Factor 2 (Family issues) contributing 20% and Factor 3 (Lack of support) contributing 7%. Factor 1 included six items that measured equity in the workplace and was therefore named *Equity*. Target factor loadings ranged from 0.33 to 0.93. The

Cronbach's alpha coefficient was 0.85, which suggests a high internal consistency score (Pallant, 2010).

Factor 2 included six items and was named *Family Issues*. Target factor loadings ranged from 0.42 to 0.93 and the Cronbach's alpha coefficient was 0.83, which also suggests a high reliability score.

The final factor, Factor 3, was made up of two items that measured lack of support in the workplace and was called *Lack of Support*. Target factors ranged from 0.80 to 0.82 and had a Cronbach's alpha of 0.81, which suggests a high internal consistency score.

5.3.3 Gender issues

Seven gender issues were entered into the analysis. Factor analysis was once again performed using the varimax rotation. Factor analysis on the gender issues showed only one component with an eigenvalue exceeding 1. This single factor included seven items and accounted for 44% of the total variance, and was called *Gender Issues*. Target loadings ranged from 0.41 to 0.73 and the Cronbach's alpha was 0.84, which indicates high internal consistency. The factor loadings are presented in Table 5.11.

Table 5.11: Factor loading for gender issues affecting women's career advancement (N = 147)

Gender issues	Factor Loadings
Female employees in the industry respond differently to female managers than to male managers	0.73
Females face significant obstacles to career advancement in the ATC industry	0.72
The factors that constrain career advancement are different for males and females	0.71
Male managers treat female employees differently than they treat male employees	0.7
Male employees in the industry respond differently to female managers than to male managers	0.7
Female managers treat female employees differently than they treat male employees	0.62

The factors that facilitate career advancement are different for males and females

0.41

5.3.4 Summary

Based on the results of the factor analysis, six factors were accepted for use as subsequent dependent variables to compare gender differences in the perception of factors that influence women's career advancement. Overall mean scores were generated for the seven factors, and ranged from 3.20 to 4.38. Factor reliabilities and means are shown in Table 5.12.

Table 5.12: Factor reliabilities and means

Factor	Number of variables	Mean	Alpha
Facilitators			
Personal effort/External	7	3.68	0.67
Attitude/Internal character	6	4.38	0.72
Constraints			
Equity	6	3.2	0.85
Family issues	6	3.3	0.83
Lack of support	2	3.6	0.81
Gender issues	7	3.33	0.84

5.4 ANOVA

5.4.1 Background

The subjects for this study were obtained by means of convenience sampling from ATCOs working in the ATC industry. The data obtained was subjected to factor analysis and, through factor analysis, six factors (Personal effort/External, Attitude/Internal character, Equity, Family issues, Lack of support and Gender issues) that influence the career advancement of female ATCOs were identified and defined. These factors, together with the biographical data, were analysed to determine whether there were any significant gender differences in male and females perceptions of factors that influence women's

career advancement. ANOVA was used to perform the comparative analysis. Throughout the analysis a significance level of 0.05 was assumed.

5.4.2 Research questions 1 and 2

Research question 1: Are there any significant gender differences in men's and women's perceptions of factors that facilitate and constrain women's career advancement and gender issues in the workplace?

Research question 2: Are there any significant differences in biographical variables of factors that facilitate and constrain women's career advancement and gender issues in the ATC industry?

To determine whether the data complied with the assumptions required for an ANOVA, a number of tests had to be performed pertaining to the assumptions. The results indicated that the residuals were not normally distributed and that variances were unequal, therefore the factors had to be transformed using Normal Blom transformation.

After the transformation, the ANOVA analysis was undertaken (Pallant, 2010). ANOVAs were performed for each of the dependent variables: Personal effort/External support, Attitude/Internal character, Equity, Family issues, Lack of support, and Gender issues. The independent variables were gender, age, number of years experience, marital status, number of children, race and level of education.

Where the ANOVA indicates significant differences, Duncan's multiple range test was used to determine between which groups the differences of opinion were. Duncan's multiple range test was the appropriate test to use as it indicates whether three or more means differ significantly within an ANOVA (Pallant, 2010).

The tables in the following section provide a summary of the results obtained from the ANOVA and Duncan's multiple range tests for each of the six factors.

5.4.2.1 Factor 1: Personal effort/External support

Table 5.13: ANOVA results for Personal effort/External support

Source	DF	F value	Pr > F
Gender	1	20.82	<.0001*
age	3	0.16	0.9208
education	2	0.6	0.5515
years' experience	1	3.17	0.0774
marital status	1	7.13	0.0085*
number of children	3	3.5	0.0174*
race	1	1.31	0.2553

*p < .05 = significant difference

Table 5.14: Means for gender: Personal effort/ External support

Gender	N	Mean	Std dev
Female (1)	66	4.6 A	0.32
Male (2)	81	4.2 B	0.51

Means with different superscripts differ significantly on the 0.05 level

Table 5.15: Means for marital status: Personal effort/ External support

Marital status	N	Mean	Std dev
Single/separated/divorced/ single parent (1)	45	4.3 A	0.52
Married (2)	102	4.4 B	0.45

Means with different superscripts differ significantly on the 0.05 level

Table 5.16: Means per number of children: Personal effort/ External support

Nr of children	N	Mean	Std dev
0 (1)	42	4.27 B *	0.54
1 (2)	37	4.47 AB	0.41
2 (3)	44	4.3 B	0.5
3+ (4)	24	4.5 A	0.37

Means with different superscripts differ significantly on the 0.05 level

*Refers to superscripts

From Table 5.13 to Table 5.16 it is evident that there are significant differences on Personal effort/External support for gender ($F = 20.82$, $P \leq 0.01$), marital status ($F = 7.13$, $p \leq 0.01$) and number of children ($F = 3.5$, $p \leq 0.05$) respectively.

The above information clearly shows that the female ATCOs viewed Personal effort/External support (networking, personal sacrifice, career mobility, career opportunities, personality, family support and luck) differently from the male ATCOs, suggesting that women are more aware of these career facilitators that influence their career advancement. In addition, people who were married also viewed these facilitators as different from people that were divorced/single/separated or single parents. These findings might suggest that people who are not married are more focused on the facilitators. This might be because married people are more focused than the single group on trying to balance work and family life, or it might be that the members of the single group are more focused on the facilitators because they do not have the same reassurance of a two-person income as do most married couples.

Finally, there were different views on the basis of the number of children the respondents have. Respondents with zero and two children viewed the Personal effort/External support facilitators differently from people with three or more children. This might be because people with three or more children are more focused on balancing work and family life, since three or more children places more pressure on people than having zero or two children. The opinions of people with one child did not differ significantly from any of the other groups, suggesting that they have different opinions in this regard.

5.4.2.2 *Factor 2: Attitude/Internal character*

Table 5.17: ANOVA results for Attitude/Internal character

Source	DF	F value	Pr > F
Gender	1	16.42	<.0001*
age	3	0.25	0.8646
education	2	0.72	0.4883
years' experience	1	6.1	0.0148*
marital status	1	0.04	0.8456
number of children	3	3.95	0.0098*
race	1	2.72	0.1012

*p <.05 = significant difference

Table 5.18: Means for gender: Attitude/ Internal character

Gender	N	Mean	Std dev
Female (1)	66	3.94 A	0.41
Male (2)	81	3.5 B	0.54

Means with different superscripts differ significantly on the 0.05 level

Table 5.19: Means per years' experience: Attitude/ Internal character

Years' experience	N	Mean	Std dev
10 and less	54	3.8 A	0.4
10 and more	93	3.6 B	0.6

Means with different superscripts differ significantly on the 0.05 level

Table 5.20: Means per number of children: Attitude/Internal character

No of children	N	Mean	Std dev
0 (1)	42	3.5 B	0.5
1 (2)	37	3.76 A B	0.5
2 (3)	44	3.8 A	0.4
3+ (4)	24	3.7 A B	0.6

Means with different superscripts differ significantly on the 0.05 level

From Table 5.17 to Table 5.20 it can be seen that there are significant differences on Attitude/Internal Character for number of children ($F = 3.95$, $p \leq 0.01$), years' experience ($F = 6.10$, $p \leq 0.05$) and gender ($F = 16.42$, $p \leq 0.01$) respectively.

The above information shows that the female ATCOs viewed the attitude/Internal Character factors (effective communication skills, attitude towards work, job knowledge, problem-solving skills, hard work, support and guidance from a mentor) differently to the male ATCOs. As mentioned previously in relation to External factors, this probably suggests that women are more aware of these career facilitators than men. In addition, there were also differences in the perceptions of these facilitators between people with more than 10 years' experience and people with less than 10 years' experience. In their study, Martinussen and Richardson (2006) found that an ATCO's job stresses become more demanding with age and experience. Therefore, this finding might indicate that

ATCOs with more than 10 years' experience operate in more complex environments and view their attitude/internal Character factors as being more important than people with less than 10 years' experience.

Furthermore, there were also different views among respondents with different numbers of children. Respondents with zero and two children viewed the attitude/Internal character factors differently from the other groups. However, people with one child or three or more children did not differ significantly from people with zero or two children. Research suggests that women with children may not pursue top positions (Zhong, 2006), that they tend to balance work-life challenges (Reddy, 2007), or that they return to work once their children are grown (O'Neil & Billimoria, 2005). Since the literature consulted on women with children varies, the reason for this finding is unclear.

5.4.2.3 Factor 3: Equity

Table 5.21: ANOVA results for Equity

Source	DF	F value	Pr > F
Gender	1	20.07	<.0001*
age	3	0.88	0.4517
education	2	1.60	0.2066
years' experience	1	0.14	0.7105
marital status	1	3.34	0.0700
number of children	3	6.33	0.0005*
race	1	1.22	0.2704

*p < .05 = significant differences

Table 5.22: Means for gender: Equity

Gender	N	Mean	Std dev
Female (1)	66	3.68 A	0.83
Male (2)	81	2.8 B	0.97

Means with different superscripts differ significantly on the 0.05 level

Table 5.23: Means per number of children: Equity

No of children	N	Mean	Std dev
0 (1)	42	2.85 C	1.1
1 (2)	37	3.62 A	0.73
2 (3)	44	3.13 B C	0.92
3+ (4)	24	3.27 A B	1.2

Means with different superscripts differ significantly on the 0.05 level

There are significant differences on Equity for number of children ($F = 4.28$, $p \leq 0.01$) and gender ($F = 20.07$, $p \leq 0.01$) respectively.

Female ATCOs viewed Equity issues (equity in promotion, equity in pay, equity in training, old-boy network, sexual harassment, credibility) differently from male ATCOs. This comes as no surprise since the literature consulted suggests that women are more prone than men to be a victim of sexual harassment (Zhong, 2006). In addition, findings from the study done by Maxwell et al. (2007) implies that organisational cultures tend to be less open to the advancement of females than to males.

Furthermore, there also were different views depending on the number of children the respondents had. Groups of respondents with zero, one, two, and three or more children all differed significantly from each other. However, there were no significant group differences for the group with two children from the group with no children and the group with three or more children, and no significant differences between the group with three or more children and that with one or two children. Once again, it is difficult to determine the reasons for these findings, since the literature pertaining to women with children differs.

5.4.2.4 Factor 4: Family Issues

Table 5.24: ANOVA results for Family issues

Source	DF	F value	Pr > F
Gender	1	6.03	0.0153*
age	3	0.80	0.4945
education	2	1.10	0.3365
years' experience	1	0.24	0.6277
marital status	1	6.86	0.0098*
number of children	3	6.23	0.0005*
race	1	0.23	0.6323

*p < .05 = significant differences

Table 5.25: Means for gender: Family issues

Gender	N	Mean	Std dev
Female (1)	66	3.4 A	0.80
Male (2)	81	3.1 B	0.89

Means with different superscripts differ significantly on the 0.05 level

Table 5.26: Means for marital status: Family issues

Marital status	N	Mean	Std dev
Single/separated/divorced/ single parent (1)	45	3 A	0.72
Married (2)	102	3.3 B	0.90

Means with different superscripts differ significantly on the 0.05 level

Table 5.27: Means per number of children: Family issues

No of children	N	Mean	Std dev
0 (1)	42	3 B C	0.85
1 (2)	37	3.36 A B	0.78
2 (3)	44	3.63 A	0.69
3+ (4)	24	2.6 C	0.88

Means with different superscripts differ significantly on the 0.05 level

There are significant differences on Family issues for number of children ($F = 6.23$, $p \leq 0.01$), marital status ($F = 6.86$, $p \leq 0.01$), and gender ($F = 6.03$, $p \leq 0.05$) respectively.

It is not surprising that women view Family issues (being a single parent, childcare responsibilities, job, characteristics, conflicts with family responsibilities, being married, lack of support at work) differently from men, since the literature clearly points out that much of the gender roles these days is still a result of traditional gender roles (Cross & Linehan, 2006). Significant differences in perceptions of family issues were also found between the married group and the single group. This might be because married ATCOs are more aware of family issues than single ATCOs.

There also were significant group differences in the number of children variable for people who had no, one, two, or three and more children. However, there were no significant group differences between the group with one child and the groups with no or three or more children, and no significant difference between the group with no children and the groups with one or three or more children.

5.4.2.5 *Factor 5 (Lack of support) and Factor 6 (Gender issues)*

Table 5.28: ANOVA results for Lack of support

Source	DF	F value	Pr > F
Gender	1	1.98	0.1616
age	3	2.06	0.1079
education	2	1.75	0.1785
years' experience	1	1.51	0.2206
marital status	1	0.16	0.6905
number of children	3	0.28	0.8429
race	1	2.71	0.1019

Table 5.29: ANOVA results for Gender issues

Source	DF	F Value	Pr > F
Gender	1	3.32	0.0707
age	3	0.28	0.8384
education	2	0.90	0.4100
years' experience	1	0.01	0.9110
marital status	1	0.15	0.6972
number of children	3	1.41	0.2432
race	1	0.62	0.4326

From Table 5.28 and Table 5.29 it is evident that there are no significant differences by group variables ($p \geq 0.05$) for the Lack of support and Gender issues factors.

5.5 RESEARCH QUESTION 3 AND 4

Content analysis was used to analyse the two open-ended questions in order to answer research questions 3 and 4. Content analysis is defined as “a detailed and systematic examination of the contents of a particular body of material for the purpose of identifying patterns, themes, or biases” (Leedy & Ormrod, 2010, p. 144). Maree (2010) further suggests that delving into a deep analysis provides the opportunity to determine a specific gender agenda or favoured interpretation of a specific group. To interpret the given data, Saunders et al. (2009) suggest compiling a list to code the variables.

Based on the above consideration, the two open-ended questions were analysed for each group. Responses were classified by main themes identified in the data, and then the data was coded by compiling a list to summarise the findings.

5.5.1 Research question 3

Both groups of ATCs (men and women) were asked two open-ended questions. The first question was: “What can the ATC industry do to better prepare women for future leadership positions in the ATC environment?”

5.5.1.1 *Women*

Forty-four of the 66 women (66.7%) responded to this question. Four themes were identified from their answers. Thirty-seven percent suggested that education programmes could teach skills in leadership training to help empower women for future leadership positions. One woman suggested substantiating the need for training by acknowledging the importance of women within the industry and the benefit of having male/female diversity. Other suggestions included the following:

Provide proper leadership training for females in the industry by making use of real life case studies, and

Cater courses or programmes in leadership skill development and have updated one-on-one meetings to hear from women what career advancement is required within the organisation.

Thirty-seven percent of the female respondents emphasised the importance of mentors or role models. For example:

Put in place mentorship programmes and actively follow-up on progress for all interested female employees within organisations.

Mentor and coach with an emphasis on REAL development - not just window dressing to meet targets.

Another respondent suggested that the organisation should first determine a leadership profile that will be preferred by the industry and then establish coaching and/or mentoring programmes that are tailored to the specific profile's needs. This can help to develop the right type of leader required by the industry. A further 18% of the women suggested career planning to assist each woman individually. One of the suggestions was:

They can tailor make a career plan for women. This will also assist women in having a better understanding of where they can possibly advance to in their future in the company.

Five percent suggested that policies and support from top management can assist with this:

Top management must emphasise their support for developing women to leadership type positions.

Finally, four percent mentioned that the processes for preparing women for leadership positions are quite fair and did not believe anything was required to improve on them.

5.5.1.2 Men

Sixty-three of the 81 men (77.7%) responded to this question and six themes were identified. Thirty-nine percent addressed the importance of education programmes and skills training. One respondent suggested:

Leadership development and training are required because it is more difficult for a woman in the workplace to exert the required authority without being judged for her actions. Respect for authority can be fostered if the staff believe that the person in authority 'deserves' to be there.

On the other hand, 17% of the men believed that women should not be given an unfair job advantage over men, but rather should be treated equally. Responses included the following:

Stop giving females unfair advantage as this will lead to spending more time at each level of the organisation to get them better qualified for the jobs at the top. In my organisation females have more opportunity to advance than men, especially non-white females. The result is that they move to the top so quickly they are still not ready for it when they get there and then makes a mess of things. This results to others questioning the ability of women to perform at the top. This is unfortunate as they are as capable as men. Better preparation will be to hold them to the same standards men are being held to as this will give them better understanding of the organisation and job, thus preparing them better.

Personally, I think it is up to the individual themselves as the industry is giving women opportunities!

Thirteen percent % believed role models or mentors can help prepare them for such positions. For example:

Proper mentorship programmes with suitable and trained mentors. Such programmes require specific outcomes to be stipulated and the intervention requires executive level support.

About eight percent suggested policies or support from top management as a means of preparing women better:

Better guidance or policies that support their development in the organisation. However, although top management should make it a target to empower women in the workplace, I think women also need to take personal responsibility for preparing themselves for higher positions.

Six percent suggested women must receive support on how to handle their emotions better:

Let them experience the same "unemotional and favour-free" work place a man endures.

Take female leaders to self-management courses, because females are emotional people, and courses can help them to manage themselves properly without taking everything personally.

Lastly, five percent believed that nothing was needed to prepare women for leadership positions:

Women have fair chances within the company – not a problem at all.

5.5.2 Research question 4

Both groups (men and women) were asked: "What can the ATC industry do to help reduce barriers to women's career advancement that might exist in the ATC industry?"

5.5.2.1 Women

A total of 44 women out of 66 (66.7%) answered this question, and five main themes were identified. Twenty-seven percent suggested being aware of the barriers and providing women with information, educational programmes or training on how to overcome them. Some suggestions included:

Men and women should both be made to understand the purpose of advancing females otherwise they just believe that advancing women is an "equity thing".

Review preconceived barriers and address how an organisation can work around these for a win-win result.

Identify the barriers and brainstorm on ideas on how to overcome them. Get the buy-in from women on what they feel is the barriers keeping them from advancing in their careers and how they feel one can reduce them.

Twenty percent suggested role models or mentors to assist women in achieving positions at the top:

Empower women by assigning them with coaches/mentors. The women who occupy upper positions can also have discussions with women on lower levels to motivate and prepare them.

Eighteen percent suggested policies or good communication from top-level management:

Organisational policies and good communication skills from top levels will enable respect for advancing women to the higher positions.

Another 18% suggested career planning:

Create a talent pool for future replacement of managers, with the correct coaching and mentoring opportunities.

Career development initiatives will help women grow in the positions at the top.

Ten percent of the women also recommended childcare support

Provide better family support structures within the organisation due to irregular hours to detract the impact of having to support family.

On the other hand, 4% of the women believed that the organisation should have the same job expectations from both genders and not focus on a specific gender's career advancement. One woman responded:

Organisations should have the same job expectations from colleagues at the same level regardless of their gender. If there are targets to be reached deadlines to be met, this is what is expected of an employee and this should be the bar. Women have the ability to juggle their family responsibility and work responsibilities very well. Family comes first but this is not to say that women will lack in their daily activities. There should not be a preconceived notion that women will not be able to reach a deadline as they have some sort of family emergency.

Treat them as individuals and do not stereotype all women as experiencing the same barriers.

Finally, 4% believed that not much could be done to improve on the barriers.

5.5.2.2 Men

Fifty-six out of 81 men (69%) responded to this question and six themes were identified. Twenty-four percent suggested policies and support from top management. Some of the responses were:

Select the correct applicant, train, develop, mentor and then deploy. However it is essential that the top management then supports this candidate fully.

Continue with equity objectives and targets.

Twenty-two percent suggested education and awareness training to assist women in this:

Training and making others aware of the barriers women face.

Be aware of the barriers and inform women and industry leaders on how to overcome such barriers.

Fifteen percent suggested the industry was fine as it is and requires nothing to help it reduce barriers:

I believe air traffic management is one of the most non-sexist industries in the country.

It depends if you are talking about advancing as a controller or advancing in a leadership/managerial aspect. There are no barriers as controllers, either you can do the job or you can't.

Due to our equity policy it is actually easier to advance if you are female with the same amount of work and knowledge.

Twelve percent of the respondents recommended that male and female colleagues should all have the same job expectations to prevent women from getting unfair advancement, and 10% suggested that there was no such thing as barriers:

Stop making such a big issue out of the whole thing. Barriers only exist because people believe that they should be there.

Stop being biased; favouring one over the other due to gender.

Nine percent suggested mentors or role models:

Women need more support and guidance from other women, especially if they aim for higher positions inside organisations.

Provide mentorship in an open and honest manner.

Six percent of the men who responded suggested childcare support:

Childcare support in the work place will help to reduce their distraction and make it easier to be a parent and work full time.

5.6 CONCLUSION

This chapter reported the results of the data analysis and research questions. There were a total of 147 participants, of which 66 were female and 81 male. Gender differences in the perceptions of facilitators of and constraints to women's career advancement and gender issues were analysed within the two gender groups. The results revealed that there were significant differences in the gender, marital status, years of experience and number of children groups for the External, Character, Equity and Family issues factors. For Family and Gender issues there were no significant differences between the gender groups.

In response to the first open-ended question, the majority of the male and female respondents suggested that educational programmes provided by the ATC industry could help prepare women for leadership positions in the industry.

On the second open-ended questions, the majority of the women suggested that education and training programmes could help reduce the barriers to women's career advancement. The majority of the men suggested policies and/or support from top management to help reduce the existing barriers. However, a number of men were of the opinion that men and women should be treated equally, since they believed that the barriers were the same for everyone, regardless of gender.

6 CHAPTER 6: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter concludes the study, discusses the limitations and make recommendations for future research.

6.2 SUMMARY OF FINDINGS

6.2.1 Biographical information

The results obtained indicate that more male respondents (81) completed the questionnaire than female respondents (66). Since the ATC industry is considered male dominated, this is not a big surprise. However, when considering that only 29% of the 323 qualified ATCOs in SA are women (ATNS, 2011), the 66 female responses implies that 70% of the total female population answered the questionnaire, in relation to 35% of the male population. It is unclear what impact the uneven population had on the results of this study.

6.2.2 Results

By making use of an exploratory factor analysis, the researcher grouped the 15 facilitator items obtained from the survey into two factors, named *Personal effort/External support* and *Attitude/Internal character*. The 15 barrier items were grouped into three factors, named *Equity issues*, *Family issues* and *Lack of support*. In addition, there also were seven items that grouped together to form the factor *Gender issues*.

For the facilitators, the *Personal effort/External support* items consisted of the following facilitator items: networking, personal sacrifice, career mobility, career opportunities, personality, family support and luck. The *Attitude/Internal character* items consisted of:

effective communication skills, attitude towards work, job knowledge, problem-solving skills, hard work, and support and guidance of a mentor.

For the barriers, the Equity issues consisted of: equity in promotion, equity in pay, equity in training, old-boy network, sexual harassment, and credibility. The Family issues consisted of: being a single parent, childcare responsibility, job characteristics, conflict with family responsibilities, being married, and lack of support at work. The Lack of support issues consisted of lack of role models and lack of a mentor and/or coach.

The six Gender issues consisted of the following:

- Female employees in the industry respond differently to female managers than to male managers
- Women face significant obstacles to career advancement in the ATC industry
- The factors that constrain career advancement are different for men and women
- Male employees in the industry respond differently to female managers than to male managers
- Female managers treat female employees differently than they treat male employees
- The factors that facilitate career advancement are different for men and women

After these six factors were identified, they were entered into an ANOVA to compare the views of male and female ATCOs to see whether there were any differences in their opinions of factors that facilitate and constrain women's career advancement within the ATC industry. The biographical variables were also compared to determine whether there were any significant differences in terms of age, years' experience, marital status, number of children and race.

Finally, the two open-ended questions were analysed through content analysis. To interpret the open-ended question, lists were compiled to code the variables, which led to the recognition of different themes.

6.3 RESEARCH FINDINGS AND DISCUSSIONS

This part of the chapter aims to answer the four research questions.

6.3.1 Research question 1

Research question 1: *Are there any significant gender differences in men's and women's perceptions of factors that facilitate and constrain women's career advancement and gender issues in the ATC industry?*

Out of the six factors mentioned previously, there were significant gender differences in perceptions found on the Personal effort/External support (networking opportunities, personal sacrifice, mobility, opportunities, personality, family support and luck), and Attitude/Internal character (effective communication skills, attitude towards work, job knowledge, problem-solving skills, hard work and support and guidance from a mentor) for factors that enhance women's career advancement. The results suggest that, overall, women ATCOs are more aware of factors that will advance their careers than male ATCOs. This might be because of the unawareness of men towards issues women face in male-dominated industries, as suggested by the findings of Vinnicombe and Singh (2002). In their study, they found that men felt that women were accommodated to advance their careers just as much as men, whereas women felt that not enough was being done to promote their advancement (Vinnicombe & Singh, 2002).

For the barriers, there were significant differences in the Equity and Family issues factors. Equity (credibility, lack of equity in pay, lack of equity in training, lack of equity in promotion decisions, old-boy network and sexual harassment) issues such as the ones mentioned here correspond with the findings in the literature, which suggest that women still feel that they are not equally rewarded, promoted and trained (Cross & Linehan, 2006; Hamel, 2009; Kwesiga & Bell, 2004; Weyer, 2007), still experience sexual harassment to a degree (Byrne, 2010), and find it difficult to integrate quickly or break through into the old boys' networks (Chowwen, 2007).

The Family issues (conflicts with family responsibility, job characteristics, being married, being a single parent, childcare responsibilities and lack of support systems at work) also relate to previous literature, which suggests that women still experience many barriers in their quest for balancing work and family life (O'Neil et al., 2008; Pichler et al., 2008; Reddy, 2007). In addition, as previously mentioned by Chovwen (2007) and Eagly and Carli (2007), although the male role at home has improved over the last couple of years, the main responsibilities still lie largely with women.

To summarise, significant gender differences in perceptions were found in the Personal effort/External support and Attitude/Internal Character factors that facilitate women's career advancement. There also were significant differences in perceptions among male and female ATCOs for the Equity and Family issues that constitute barriers to women's career advancement.

No significant gender differences were found in perceptions for the factors Lack of support and Gender issues. Although research pertaining to Lack of support issues (lack of role models, lack of mentors) suggests that many women operating in male-dominated organisations find it difficult to obtain mentors in their organisations (Cross & Linehan, 2006), no such evidence was found in this study. This implies that women in the ATC industry tend to feel that they receive enough support in the form of mentors and/or role models. Responses obtained from the open-ended questions during the data collection suggest that 37% of the women and 13% of the men recommended mentorship programmes for better preparing women for leadership position in the ATC industry. This probably implies that they are aware of the important role mentors play in career advancement (Cross & Linehan, 2006).

Like the Lack of support factor, there were no significant differences found for the Gender issues factor in the ATC industry. This finding contradicts a number of previous findings and literature on gender issues (Kabacoff, 2004; Neil-Smith & Cockburn, 2009; Reddy, 2007; Waldstrøm & Madsen, 2007). However, because of a lack of information on gender issues experienced specifically within the ATC, a large amount of literature focused on such issues in general. It is recommended that qualitative in-depth interviews be done to gain more information on these issues.

6.3.2 Research question 2

Research question 2: *Are there any significant differences in biographical variables of factors that facilitate and constrain women's career advancement and gender issues in the ATC industry?*

The six identified factors were subjected to an ANOVA to determine whether any significant biographical variables exist. Since gender has already been discussed, the biographical factors applicable in this part of the chapter consisted of age, years' experience, marital status, number of children and race.

For the External factors, there were significant differences between groups with regard to their marital status and number of children. Since research suggests that women with families are more inclined to balance work and family life (Cross & Linehan, 2006), this might suggest that married ATCOs are more focused on work-life balance than on career facilitators. On the other hand, single/divorced or single parent ATCO's might be more aware of such facilitators, since they do not have the assurance of a two-person income. It is unclear why the groups with different numbers of children also differed.

For the Character factor there were significant differences in the number of children and years' experience. Once again, it is unclear what the reason might be for the differences depending on the number of children variable. For years' experience it is assumed that ATCOs with more than 10 years' experience become more aware of these factors as their work progresses with age and experience. This also correlates with the literature consulted, with Martinussen and Richardson (2006) and Van der Westhuizen (2002) suggesting that ATCO job stresses become more demanding with age and experience.

For the Equity and Family issues factors, significant factors were found on number of children. In addition, there were significant differences in the marital status group in the Family issues factor. Cross and Linehan (2006) suggest that a woman's career is much more complex than a man's career, given the traditional role women used to play at home. Previous research suggests that women in higher level positions are required to work at least 15 to 20 hours more per week than their contracts require (Ogden et al., 2006). This

might be a direct cause of why women in higher level positions tend to be single, married with few children, or choose not to have children at all (Zhong, 2006).

Although not much of the literature that was consulted looked at the impact of number of children on women's career advancement, Reddy (2007) proposed that women who already have children are presented with a number of challenges when it comes to balancing work and motherhood. She is of the opinion that it usually is the mother's responsibility to spend time with the children, transport them to their different activities or take time off work to care for them when they are sick (Reddy, 2007). Because of the unconventional time schedules of an ATCO (Van der Westhuizen, 2002), this might also contribute for the fact that number of children had such a significant effect in this study. It is recommended that a further investigation is carried out to investigate this finding, as it falls beyond the scope of this study.

Finally, like the gender issues in the previous section, there were no significant differences for the Lack of support and Gender issues factors in the biographical variables. This finding is quite contradicting to the literature consulted which suggests that a number of gender and support issues exist not only in the broader aviation industry (Mitchell & Kristovics, 2005), but also in most other organisations (Weyer, 2007).

6.3.3 Research question 3

Research question 3: *What can the industry do to better prepare women for leadership positions within the ATC industry?*

Content analysis was used to analyse questions 3 and 4. For question 3, four themes were identified by the female respondents. They were of the opinion that educational programmes, role models, career planning and support from top management should be used to better prepare women for leadership positions in the ATC industry. The above findings correspond with the literature, which suggests that all of the above be used to encourage the career advancement of women (Ogden et al., 2006; Singh et al., 2006; Straub, 2007).

For the male respondents, six themes were identified. The men were of the opinion that educational programmes and skills training, mentors or role models, policies and support from top management can all be used to better prepare women for leadership positions in the ATC industry. In addition, some men were of the opinion that men and women should be treated equally (they were of the opinion that these types of training will give women an unfair advantage over men). Other themes were training to keep their emotions in control and, finally, some were of the opinion that nothing was needed as the industry was doing fine as it is.

From the above findings, it is also clear that these men's suggestions of educational programmes, role models and policies and support all corresponds to the facilitators explored through the literature review (Clarke, 2011; Kingdona & Knight, 2007; Ogden et al., 2007). However, the views of some men who felt training constitutes as unfair advantage and that women should be given training to keep their emotions in control correspond with the literature consulted on women's typical experiences in male-dominated environments (Mitchell & Kristovics, 2005; Wilson, 2006). The comments of these men included:

Let them experience the same "unemotional and favour-free" work place a man endures.

Take female leaders to self management courses, because females are emotional people, and course can help them to manage themselves properly without taking everything personally.

These comments also correspond with the findings of Wilson (2006), who suggested that men view women as an emotional liability.

From the above findings it is clear that many men are open-minded towards the advancement of women to leadership positions within their organisations. However, there still remain some typical stereotypes, namely that women find it difficult to cope in certain male-dominated work situations.

6.3.4 Research question 4

Research question 4: *What can the ATC industry do to help reduce barriers to women's career advancement that might exist in the ATC industry?*

From the comments obtained from the female respondents, five main themes were identified. These were awareness training for women on typical barriers that might be faced in the industry and guidance on how to overcome them, role models and mentors, policies, career planning, and childcare support. An interesting finding in relation to this question was the 4% of women who were of the opinion that the industry should have the same job expectations from men and women, regardless of their gender. They felt they did not want to feel favoured over the men in their industry.

For this question, six themes were identified from the male respondents. These were policies and support from management, education and awareness training, same job expectations regardless of gender, resistance towards barriers, and making use of mentors and role models (Clarke, 2011; Cross & Linehan, 2006; Ehrich, 2008; Kingdona & Knight, 2007; Ogden et al., 2006). Finally there were also some men who suggested that the industry was fine as it is and that nothing needs to be done. This finding can be associated to that of Vinnicombe and Singh (2002) in which they found that even though most men in their study felt that organisations were being more proactive towards the advancement of females, females in the study continued to experience discrimination.

This section aimed to answer the research questions, which attempted to determine whether there were any significant gender differences in perceptions about the factors that facilitate and constrain women's career advancement. The results were discussed and concluded.

6.4 LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The study examined gender differences in male and female perceptions of barriers and facilitators that constrain women's career advancement in the ATC industry. It was limited to convenience sampling for both groups of respondents (men and women). In addition, the findings were limited to an uneven number of men and women. Although more men than women responded to the questionnaire, in comparison to the total population, only 35% of the males responded in comparison to 70% of the females. A reason for this might be because women found the study more interesting than men, since one of the main aims of the study concerned women. It is suggested that an effort be made to encourage more male respondents and eliminate bias in future studies. Other limitations and recommendations are:

The research design that was used in this study. Future research might consider applying a more in-depth qualitative approach, such as interviews with focus groups, to evaluate ATCOs' opinions of industry processes and procedures with regard to overcoming barriers and advancing women's careers.

The sampling method used. A major limitation of convenience sampling is that it is only valid for that specific moment in time when the data is recorded (Saunders et al., 2009). The study can therefore be broadened by making use of random sampling instead of convenience sampling. This will increase the generalisability of the data.

This study only measured the responses of ATCOs working in the South African ATC industry. It did not consider the broader aviation industry or the ATC industry at an international level. Therefore, further research is required to generalise the findings to the South African aviation industry or the ATC industry on an international level.

In terms of the literature consulted, it was found that most studies done in the ATC industry focused on stress and burnout. It is recommended that studies be done to determine whether there are any differences in methods used by men and women to cope with such stresses.

This study is focused on women only and, although the perceptions of men and women ATCOs were compared, the results did not provide any information that benefited males in the industry. In addition, the results cannot be generalised to all women in other male-dominated industries.

This study recorded the overall perceptions of all men and women, regardless of their age or work experience. In the results chapter, it was evident that there were differences in the perceptions between groups of people who had more than 10 years' experience and those with less than 10 years' experience. It therefore is recommended that future studies examine how age and work experience relate to differences in the perceptions of barriers, facilitators and gender issues.

Finally, significant differences in perceptions were also found on the External, Character, Equity and Family issues in terms of the number of children the respondents had. Since no literature was consulted regarding the impact that number of children has on a woman's career advancement, it is unclear what the results are. This therefore is a further area for investigation.

REFERENCES

- ATNS. (2011). *ATCO Trainee Bursary Programme*. Retrieved November 12, 2011, from <http://www.atns.co.za/atc-trainee-bursary-programme>
- Booyesen, L. A. E., & Nkomo, S. M. (2010). Gender role stereotypes and requisite management characteristics: the case of South Africa. *Gender in Management: An International Journal*, 25(4), 285-300. doi:10.1108/17542411011048164
- Broadbridge, A. (2010). 25 years of retailing; 25 years of change? Reflecting on the position of women managers. *Women in Management Review*, 25(8), 649-660. doi:10.1108/17542411011092318
- Businesswomen's Association of South Africa. (2011). *BWA South African Women in Leadership Census 2011*. Retrieved April 13, 2012, from http://www.bwasa.co.za/Portals/4/docs/ho/CENSUS_Presentation_Final.pdf
- Byrne, L. (2010, January 24). The male chauvinist pigs of Irish air traffic control. *Irish Mail on Sunday*. Retrieved from <http://podcasting.ie/docs/mos.pdf>
- Chowwen, C. (2003). Experience above the glass ceiling: a study of female executives. *An International Journal of Psychology in Africa*, 11(1), 138-46. Retrieved June 18, 2010, from <http://www.ajol.info/index.php/ifep/cart/view/23448/20102>
- Chowwen, C. (2007). Barriers to acceptance, satisfaction and career growth. Implications for career development and retention of women in selected male occupations in Nigeria. *Women in Management Review*, 22(1), 68-78. doi:10.1108/09649420710726238

- Clarke, M. (2011). Advancing women's careers through leadership development programs. *Employee Relations*, 33(5), 498-515. doi:10.1108/01425451111153871
- Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: SAGE Publications.
- Cross, C., & Linehan, M. (2006). Barriers to advancing female careers in the high-tech sector: empirical evidence from Ireland. *Women in Management Review*, 21(1), 28-39. doi:10.1108/09649420610643394
- Diamond, A. (2007). *The career development and identity of Victorian local government chief executives: is gender a factor?* (Doctoral dissertation). University of Victoria, Victoria, Australia.
- Drew, E., & Murtagh, E. M. (2005). Work/life balance: senior management champions or laggards? *Women in Management Review*, 20(4), 262-278. doi:10.1108/09649420510599089
- Eagly, A. H., & Carli, L. L. (2007). Women and the labyrinth of leadership. *Harvard Business Review*, 85(9), 63-72. Retrieved June 18, 2010, from <http://www.theleadershipbuilder.com/PDF/16Women%20and%20the%20Labyrinth%20of%20Leadership.pdf>
- Ehrich, L. C. (2008). Mentoring and women managers: another look at the field. *Gender in Management: An International Journal*, 23(7), 469-483. doi:10.1108/17542410810908839
- Enache, M., Sallan, J. M., Simo, P., & Fernandez, V. (2011). Career attitudes and subjective career success: tackling gender differences. *Gender in Management: An International Journal*, 26(3), 234-250. doi:10.1108/175424111111130990

- Ezzedeen, S. R., & Ritchy, K. G. (2009). Career advancement and family balance strategies of executive women. *Gender in Management: An International Journal*, 24(6), 388-411. doi:10.1108/17542410910980388
- Greenhaus, J. H., Callanan, G. A., & Godschalk, V. M. (2007). *Career management* (3rd ed.). USA: South Western Cengage Learning.
- Hamel, J. H. (2009). Exit, voice, and sense making following psychological contract violations: women's responses to career advancement barriers. *Journal of Business Communication*, 46(2), 234-261. doi:10.1177/0021943608328079
- ILO. (2011). *New labour market challenges for women*. Retrieved April 13, 2012, from http://www.ilo.org/public/english/region/eurpro/budapest/info/bul/95-1/nl7_41.html
- Kabacoff, R. (2004). *Competency models, emotional intelligence, and effective leadership styles: a synthesis*. Symposium conducted at the University of Leeds, Leeds, England.
- Kingdona, G., & Knight, J. (2007). Unemployment in South Africa, 1995-2003: causes, problems and policies. *Journal of African Economies*, 16(5), 813-848.
doi:10.1093/jae/ejm016
- Kuhlmann, E., & Bourgeault, I. L. (2008). Gender, professions and public policy: new directions. *Equal Opportunities International*, 27(1), 5-18.
doi:10.1108/02610150810844901
- Kumra, S. (2010). Exploring career "choices" of work-centred women in a professional service firm. *Gender in Management: An International Journal*, 25(3), 227-243.
doi:10.1108/17542411011036428

- Kwesiga, E., & Bell, M. P. (2004). Back to organizational socialization: building a case for the advancement of women in organizations. *Equal Opportunities International*, 23(7/8), 3-20. doi:10.1108/02610150410787873
- Langan-Fox, J., Canty, J., & Sankey, M. (2009). Human factors measurement for future air traffic control systems. *Human Factors: The Journal of the Human Factors and Ergonomics*, 51(5), 595-637. doi:10.1177/0018720809355278
- Leedy, P. D. & Ormrod, J. E. (2010). *Practical research: planning and design* (9th ed.). Upper Saddle River, NJ: Pearson.
- Lewis-Enright, K., Crafford, A., & Crous, F. (2009). Towards a workplace conducive to the career advancement of women. *SA Journal of Industrial Psychology*, 35(1), 1-9. doi:10.4102/sajip.v.35i1.832
- Marcinkus, W. C., Whelan-Berry, K. S., & Gordon, J. R. (2007). The relationship of social support to the work-family balance and work outcomes of midlife women. *Women in Management Review*, 22(2), 86-111. doi:10.1108/096494207 10732060
- Maree, K. (2010). *First steps in research*. Pretoria SA: Van Schaik Publishers.
- Martinussen, M., & Richardsen A. M. (2006). Air traffic controller burnout: survey responses regarding job demands, job resources, and health. *Aviation, Space, and Environmental Medicine*, 7(4), 422-428.
Retrieved October 23, 2010, from <http://www.ncbi.nlm.nih.gov/pubmed/16676654>
- Mathur-Helm, B. (2005). Equal opportunity and affirmative action for South-African women: a benefit or barrier? *Women in Management Review*, 20(1), 56-71. doi:10.1108/09649420510579577

- Mathur-Helm, B. (2006). Women and the glass ceiling in South African banks: an illusion or reality? *Women in Management Review*, 21(4), 311-326.
doi:10.1108/09649420610667028
- Mavin, S. (2001). Women's career in theory and practice: time for change? *Women in Management Review*, 16(4), 183-192. doi:10.1108/09649420110392163
- Maxwell, G. A., Ogden, S. M., & McTavish, D. (2007). Enabling the career development of female managers in finance and retail. *Women in Management Review*, 22(5), 353-370. doi:10.1108/09649420710761437
- Michie, S., & Nelson, D. L. (2006). Barriers women face in information technology careers: self-efficacy, passion and gender biases. *Women in Management Review*, 21(1), 10-27. doi:10.1108/09649420610643385
- Mitchell, J. & Kristovics, A. (2005). Death of an airline: the well-being of retrenched Ansett staff – 3 years on. *International Journal of Employment Studies*, 13(2), 89-118.
- Mitchell, J., Kristovics, A., & Vermeulen, L. (2006). Gender issues in aviation: pilot attitudes and employment relations. *International Journal of Employment Studies*, 14(1), 35-59.
- Mitchell, J., Kristovics, A., Vermeulen, L., Wilson, J., & Martinussen, M. (2005). How pink is the sky? A cross national study of the Gendered Occupation of Pilot. *Employment Relations Record*, 5(2), 43-60.
- Mitchell, J., Vermeulen, L., & Naidoo, P. (2009). Flying glass: a qualitative analysis of pilot perceptions of automated flight-decks after 20 years. *International Journal of Applied Aviation Studies*, 9(1), 13-28.

- Murray, R. S (2006). *The development of an innovative measuring instrument to assess human factors training of air traffic controllers*. (Doctoral dissertation). University of Johannesburg, Johannesburg.
- Neal-Smith, S., & Cockburn, T. (2009). Cultural sexism in the UK airline industry. *Gender in Management: An International Journal*, 24(1), 32-45.
doi:10.1108/175424109 10930734
- Ogden, S. M., McTavish, D., & McKean, L. (2006). Clearing the way for gender balance in the management of the UK financial services industry: enablers and barriers. *Women in Management Review*, 21(1), 40-53. doi:10.1108/09649420610643402
- O'Neil, D. A., & Bilimoria, A. (2005). Women's career development phases: idealism, endurance, and reinvention. *Career Development International*, 10(3), 168-189.
doi:10.1108/13620430510598300.
- O'Neil, D. A., Bilimoria, A., & Saatcioglu, A. (2004). Women's career types: attributions of satisfaction with career success. *Career Development International*, 9(5), 478-500.
doi:10.1108/13620430410550745
- O'Neil, D. A., Hopkins, M. M., & Bilimoria, M. (2008). Women's careers at the start of the 21st century: patterns and paradoxes. *Journal of Business Ethics*, 80(4), 727-743.
doi:10.1007/s10551-007-9465-6
- Pallant, J. (2007). *SPSS: Survival manual*, (3rd ed). England: Open University
- Pichler, S., Simpson, P. A., & Stroh, L. K. (2008). The glass ceiling in human resources: exploring the link between women's representation in management and the practices

of strategic human resource management and employee involvement. *Wiley InterScience*, 47(3), 463-479. doi:10.1002/hrm.20227

Prinzo, V. O., & Morrow, D. G. (2002). Improving pilot/air traffic control voice communication in general aviation. *The International Journal of Aviation Psychology*, 12(4), 341-357. doi:10.1207/S15327108IJAP1204_2

Reddy, K. (2007). *The opt-out revolution by women in management: myth or reality?* (Master's dissertation). UNISA, Pretoria, South Africa.

Rindfleish, J., & Sheridan A. (2003). No change from within: senior women manager's response to gendered organisational structures. *Women in management review*, 18(6), 299-310. doi:10.1108/09649420310491477

Sanyal, A. (2009). *The unsung radar controller*. Retrieved April 14, 2012 from http://www.clubcontroltower.net/index.php?option=com_content&view=article&id=62&Itemid=65. 14/04/2012

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (5th ed.). Harlow, Essex: Pearson.

Schroeder, D. M. (2009). *Friendly skies over Africa: improving air traffic system safety in Africa and United States Africa command role in development* (Master's dissertation). Air War College, Air University, US Department of Defence.

- Schwartz, D. B. (1996). The impact of work-family policies on women's career development: boon or bust? *Women in Management Review*, 11(1), 5-19.
doi:10.1108/09649429610109280. Retrieved April 13, 2012, from <http://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CCUQFjAA&url=http%3A%2F%2Fwww.ekon.sun.ac.za>.
- Sheridan, F. (2007). Gender, language and the workplace: an exploratory study. *Women in Management Review*, 22(4), 319-336. doi:10.1108/096494207 10754264
- Shouksmith, G., & Taylor, J. E. (1997). The interaction of culture with general job stressors in air traffic controllers. *The International Journal of Aviation Psychology*, 7(4), 343-352. doi:10.1207/s15327108ijap0704_6
- Singh, P. R. (2009). *Being an air traffic controller*. Retrieved April 14, 2012, from http://www.clubcontroltower.net/index.php?option=com_content&view=article&id=292&Itemid=65
- Singh, V., Vinnicombe, S., & James, K. (2006) Constructing a professional identity: how young female managers use role models. *Women in Management Review*, 21(1), 67-8. doi:10.1108/09649420610643420
- Straub, C. (2007). A comparative analysis of the use of work-life balance practices in Europe: do practices enhance females' career advancement? *Women in Management Review*, 22(4), 289-304. doi:10.1108/09649420710754246
- Terr Blance, M., & Durrheim, K. (2004). *Research in practice: applied methods for the social sciences*. Cape Town: University of Cape Town Press.
- The Ninety-Nines Inc. (2011). *Women in ATC*. Retrieved November 11, 2011, from http://www.ninety-nines.org/index.cfm/air_traffic_control.htm

- Tlaiss, H. & Kauser, S. (2010). Perceived organizational barriers to women's career advancement in Lebanon. *Gender in Management: An International Journal*, 25(6), 462-496. doi:10.1108/17542411011069882
- Turhan, U. (2009). Performance perception of Turkish air traffic controllers. *International Journal of Civil Aviation*, 1(1), 74-89. Retrieved from <http://www.macrothink.org/journal/index.php/ijca/article/viewPDFInterstitial/66/36>.
- Van der Westhuizen, L. (2002). *Die voorkoms van werkstres by lugruimbeheerders in die Suid-Afrikaanse lugmag*. (Master's dissertation). University of Pretoria, Pretoria, SA.
- Van Klaveren, M., Tijdens, K., Hughie-Williams, M., & Martin, N. R. (2009). *An overview of women's work and employment in South Africa*. University of Amsterdam, Netherlands, Amsterdam Institute for Advanced Labour Studies.
- Vermeulen, L., & Mitchell, J. (2007). Development and validation of a measure to assess perceptions regarding gender-related pilot behaviour. *International Journal of Aviation Psychology*, 17(2), 197-218.
- Vinkenburg, C. J., Van Engen, M. L., Eagly, A. H., & Johannesen-Schmidt, M. C. (2011). An exploration of stereotypical beliefs about leadership styles: is transformational leadership a route to women's promotion? *The Leadership Quarterly*, 22(11), 10-21. doi:10.1016/j.leaqua.2010.12.003
- Vinnicombe, S., & Singh, V. (2002). Sex role stereotyping and requisites of successful top managers. *Women in Management Review*, 17(2/3), 120-130. doi:10.1108/09649420210425264

- Waldstrøm, C., & Madsen, H. (2007). Social relations among managers: old boys and young women's networks. *Women in Management Review*, 22(2), 136-147. doi:10.1108/09649420710732097
- Wallace, M. (2000). Workplace training initiatives: implications for women in the Australian workforce. *Journal of European Industrial Training*, 24(5), 268-274. doi:10.1108/03090590010372038
- Watts, J. H. 2009. Leaders of men: woman "managing" in construction. *Work, Employment and Society*, 23(3), 512-530. doi:10.1177/0950017009337074
- Weyer, B. (2007). Twenty years later: explaining the persistence of the glass ceiling on women leaders. *Women in Management Review*, 22(6), 482-496. doi:10.1108/09649 420710778718
- Wilson, J. (2005). *Gender based issues in aviation, attitudes towards female pilots: a cross cultural analysis*. (Doctoral thesis). University of Pretoria, Pretoria, SA.
- Wings over Kansas. (2010). *Bonnie Johnson with Women in Aviation: Pioneer Female, First Civilian Air Traffic Controller in the United States*. Retrieved June 18, 2010 from <http://www.wingsoverkansas.com/bonnie/article.asp?id=68>
- Zhong, M.S. (2006). *Factors affecting women's career advancement in the hospitality industry: Perceptions of students, educators and industry recruiters*. (Doctoral dissertation). Texas Tech University, Texas, USA.

ANNEXURE A

- 1st draft of data collection instrument(s) -

Factors Affecting Women's Career Advancement

Section I: Factors that Facilitate Women's Career Advancement

Please indicate your opinion regarding the importance of the following variables that may contribute to women's career advancement in your organisation.

Facilitators	Not Important			Extremely Important	
	1	2	3	4	5
1. Hard work	1	2	3	4	5
2. Attitude toward work	1	2	3	4	5
3. Effective communication skills	1	2	3	4	5
4. Problem-solving skills	1	2	3	4	5
5. Personal sacrifice	1	2	3	4	5
6. Personality	1	2	3	4	5
7. Job knowledge	1	2	3	4	5
8. Support and guidance from a mentor	1	2	3	4	5
9. Educational qualifications	1	2	3	4	5
10. Opportunities	1	2	3	4	5
11. Luck	1	2	3	4	5
12. Career goals	1	2	3	4	5
13. Mobility	1	2	3	4	5
14. Networking opportunities	1	2	3	4	5
15. Family support	1	2	3	4	5

Section II. Factors that Constrain Women's Career Advancement

Please indicate your opinion regarding each of the following variables that may be barriers to the career advancement of women in your organisation.

Constraints	Not a Barrier			A Major Barrier	
	1	2	3	4	5
16. Difficulty in establishing credibility	1	2	3	4	5
17. Conflicts with family responsibilities	1	2	3	4	5
18. Job characteristics, e.g. irregular work hours	1	2	3	4	5
19. Lack of equity in pay	1	2	3	4	5
20. Lack of equity in training	1	2	3	4	5
21. Lack of equity in promotion decisions	1	2	3	4	5
22. Old-boy network *	1	2	3	4	5
23. Sexual harassment	1	2	3	4	5
24. Inadequate job knowledge	1	2	3	4	5
25. Lack of mentoring/coaching	1	2	3	4	5
26. Lack of role models	1	2	3	4	5
27. Being married	1	2	3	4	5
28. Being a single parent	1	2	3	4	5
29. Childcare responsibilities	1	2	3	4	5
30. Lack of support systems at work	1	2	3	4	5

* An old-boy network refers to an all-male group of colleagues who socialize inside and outside the work environment.

Section III. Gender Issues in the Workplace

Please select the answer that best represents your opinion.

31. Have you ever worked for a female supervisor during your career?

Yes = 1; No = 2

1 2

How comfortable do you feel about working for a:

	Very Uncomfortable				Very Comfortable
32. Female supervisor?	1	2	3	4	5
33. Male supervisor?	1	2	3	4	5

34. Have you ever worked as a supervisor?

Yes = 1; No = 2

1 2

How comfortable do you feel (or think you would feel) about supervising:

	Very Uncomfortable				Very Comfortable
35. Female employees?	1	2	3	4	5
36. Male employees?	1	2	3	4	5

Please indicate your level of agreement with the following statements.

	Strongly Disagree				Strongly Agree
37. Females face significant obstacles to career advancement in the organisation.	1	2	3	4	5
38. Female managers/supervisors treat female employees differently than they treat male employees.	1	2	3	4	5
39. Male managers/supervisors treat female employees differently than they treat male employees.	1	2	3	4	5
40. Female employees in the organisation respond differently to female managers than to male managers.	1	2	3	4	5
41. Male employees in the organisation respond differently to female managers than to male managers.	1	2	3	4	5
42. The factors that contribute to career advancement are different for males and females.	1	2	3	4	5
43. The factors that constrain career advancement are different for males and females.	1	2	3	4	5

SECTION IV. OPEN-ENDED QUESTIONS

Instructions: The open response questions are designed to gather further information. Please provide your opinions on the following:

44. What do you think organisational programmes could do to better prepare women for leadership positions in the industry?

45. What do you think organisational programmes could do to help reduce the barriers to women's career advancement that may exist in organisations?

ANNEXURE B
- Informed consent form -



Informed consent for participation in an academic research study

Dept. of Human Resource Management

TITLE OF THE STUDY

Factors affecting the career advancement of female air traffic controllers in the aviation industry of
South Africa

Research conducted by:

Ms M. Cronje (26058406)
Cell: 082 340 8508

Dear Respondent

You are invited to participate in an academic research study conducted by Marisa Cronje, a Master's student from the Department Human Resource Management at the University of Pretoria.

The purpose of the study is to examine men's and women's perceptions of factors that facilitate and constrain women's career advancement within the Air Traffic Control environment in South Africa and to determine whether there are any significant differences between them.

Please note the following:

- This study involves an anonymous survey. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers you give.
- Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take more than 10 minutes of your time.
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
- Please contact my supervisor, Prof. Nasima Carrim at nasima.carrim@up.ac.za if you have any questions or comments regarding the study.

Please sign the form to indicate that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on a voluntary basis.

Respondent's signature

Date

ANNEXURE C

- Permission to use questionnaire -

From: "Yan Zhong" <yzhong@vsu.edu>
To: "Nasima Carrim" <Nasima.Carrim@up.ac.za>
Date: Tue, 15 Apr 2008 20:42:05 +0200
Subject: survey

Dear Nasima Carrim:

Dr Couch forwarded your email concerning the permission of using the survey we conducted in 2006 for my dissertation. I attached in this email, hope it will help.

Good luck to your research!

Grace (Yan) Zhong, Ph.D
Assistant Professor
Hospitality Management Program
Virginia State University
PO Box 9211
Petersburg, VA 23806